

# **Guía de Proyeccion Econométrica**

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# Preface

El presente libro nace de la necesidad de acercar a los estudiantes y profesionales del análisis económico a una segunda etapa en su formación econométrica: aquella que trasciende el modelo lineal clásico para enfrentar los retos empíricos del mundo real. En la práctica, los datos rara vez se ajustan a los supuestos ideales de linealidad, normalidad o independencia. Por ello, el presente texto se concentra en métodos aplicados y técnicas econométricas que permiten abordar con mayor realismo y rigor los problemas más comunes en la evaluación de políticas, el estudio del comportamiento económico y el diseño de proyecciones con fines prácticos.

A lo largo de mi experiencia docente, he constatado una creciente demanda por parte de los estudiantes de herramientas que les permitan no solo comprender la teoría, sino también aplicarla con propiedad en entornos de datos diversos. Este libro busca responder a esa necesidad con un enfoque aplicado, utilizando ejemplos reales, sintaxis en R, y una estructura clara que vincula la teoría con la práctica. Cada capítulo está diseñado para ser autónomo, pero también parte de una secuencia lógica que va desde la especificación de modelos hasta la identificación de efectos causales.

El texto cubre áreas clave como el modelado de variables dependientes limitadas, el uso combinado de cortes transversales, el análisis con datos de panel, y una introducción metodológica a la evaluación de impacto. Estos temas han sido seleccionados no solo por su relevancia metodológica, sino también por su aplicación directa en proyectos de investigación, tesis de grado y análisis institucional en organismos públicos y privados. La selección responde, además, a una visión integral del análisis econométrico como una herramienta de diagnóstico, predicción y evaluación en contextos complejos y reales.

Espero que este libro contribuya a fortalecer una práctica econométrica más crítica, más contextualizada y más comprometida con los problemas que enfrenta nuestra sociedad. Mi deseo es que los lectores no solo dominen las técnicas aquí presentadas, sino que también aprendan a cuestionar los supuestos detrás de los modelos y a interpretar sus resultados con responsabilidad. Si este texto logra acompañar a sus lectores en ese proceso, su propósito habrá sido cumplido.

# 1 Introducción

La econometría contemporánea ha evolucionado más allá del modelo clásico de regresión lineal, abarcando una diversidad de técnicas diseñadas para abordar preguntas empíricas cada vez más complejas. Este libro de Proyección Econométrica tiene como objetivo servir de puente entre los fundamentos clásicos y las herramientas intermedias y aplicadas que hoy constituyen el núcleo de muchas investigaciones empíricas en economía, ciencias sociales, salud pública y políticas públicas.

En particular, el libro se enfoca en cuatro grandes bloques temáticos que reflejan escenarios reales de análisis económico:

## 1.1 Modelos con Variable Dependiente Limitada

Muchos fenómenos de interés no se expresan naturalmente como variables continuas y sin restricciones. Por ejemplo, las decisiones de participación laboral, la elección entre múltiples opciones educativas, o el acceso a servicios financieros, son todos ejemplos donde el uso de modelos lineales tradicionales es inadecuado. Este capítulo introduce modelos como el Logit, Probit, Tobit y multinomial, proporcionando una base conceptual y práctica para modelar variables cualitativas o censuradas.

## 1.2 Combinación Independiente de Cortes Transversales

Ante la escasez de datos panel, los investigadores recurren a combinaciones de cortes transversales para analizar tendencias o realizar inferencias en contextos donde los datos longitudinales no están disponibles. Aquí se discuten estrategias para integrar y modelar múltiples encuestas independientes, cuidando problemas de heterogeneidad no observada y diferencias estructurales entre periodos.

## 1.3 Modelos con Datos de Panel

Los datos de panel permiten controlar la heterogeneidad individual no observable y estudiar dinámicas temporales con mayor precisión. Este capítulo desarrolla las herramientas fundamentales para trabajar con paneles balanceados y no balanceados, introduciendo modelos de

efectos fijos, efectos aleatorios y modelos dinámicos, junto con criterios de elección entre ellos.

## **1.4 Introducción a la Evaluación de Impacto**

Evaluar el efecto causal de intervenciones o políticas públicas es una tarea central en la econometría aplicada. Este capítulo ofrece una introducción a las metodologías de evaluación de impacto, como el enfoque de diferencias en diferencias (DiD), la asignación aleatoria, los modelos de regresión discontinua y las estrategias de variables instrumentales. Se enfatiza la identificación causal y la interpretación adecuada de los resultados.

A lo largo del texto, se pone especial énfasis en la implementación práctica de los métodos econométricos utilizando software estadístico, análisis de datos reales y ejercicios interpretativos. Cada capítulo está diseñado para proporcionar tanto el aparato teórico como las herramientas empíricas necesarias para enfrentar problemas aplicados de proyección y análisis económico.

Este libro está pensado como un recurso intermedio entre los cursos introductorios de econometría y los enfoques avanzados de inferencia causal y econometría estructural. Es ideal para estudiantes de pregrado avanzado, posgrado o profesionales interesados en fortalecer su capacidad analítica con herramientas modernas y relevantes.

## 2 Resumen

Este libro de Proyección Econométrica ofrece una guía intermedia-aplicada para abordar problemas empíricos más allá del modelo clásico de regresión. Está dirigido a estudiantes y profesionales que buscan aplicar técnicas como modelos con variable dependiente limitada, combinación de cortes transversales, datos de panel y evaluación de impacto. Con un enfoque práctico y apoyado en ejemplos reales en R, el texto vincula la teoría con la implementación, promoviendo una práctica econométrica rigurosa, contextualizada y comprometida con el análisis de fenómenos económicos complejos.

## 3 Variable dependiente binaria

### 3.1 El modelo de probabilidad lineal (MPL)

¿Qué ocurre cuando se desea usar la regresión múltiple para explicar eventos cualitativos?

El caso más sencillo es un evento del tipo binario, es decir, que  $y$  toma valores de cero y uno. Por ejemplo,  $y$  puede indicar si una persona trabaja o no trabaja, esta empleado o desempleado o, si una empresa es grande o pequeña. En cualquier caso se puede hacer que  $y = 1$  denota uno de los resultados o  $y = 0$  denota el otro resultado. También podría pensarse como éxito y fracaso. La demostración parte de la función de regresión poblacional.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + u \quad [1]$$

Como  $y$  solo puede tomar dos valores, los  $\beta_j$  **no** pueden interpretarse como un cambio en  $y$  para un aumento de  $x_j$  **ceteris paribus**. Recordar que en este caso  $y$  cambia de cero a uno, o no cambia. Partiendo del supuesto de **media condicional cero**  $E(u|X_1, X_2, \dots, X_k) = 0$ , tenemos:

$$E(y|\mathbf{X}) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + u \quad [2]$$

El punto clave es que  $y$  es una variable binaria que toma valores de cero y uno, entonces tenemos que  $P(y = 1|\mathbf{X}) = E(y|\mathbf{X})$ : la probabilidad de “**éxito**”. Por lo tanto, tenemos

$$P(y = 1|\mathbf{X}) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + u \quad [3]$$

La ecuación [3] dice que, la probabilidad de éxito, es decir  $p(x) = P(y = 1|\mathbf{X})$ , es una función lineal de las variables  $x_j$ , también se le conoce como la **probabilidad de respuesta**. Dado que, las probabilidades deben sumar uno,  $P(y = 0|\mathbf{X}) = 1 - P(y = 1|\mathbf{X})$ , es también una función lineal de las  $x_j$

Por lo tanto, a un modelo de regresión lineal múltiple en el que la variable dependiente es una variable binaria se le conoce como: **El modelo de probabilidad lineal (MPL)**, porque la probabilidad de respuesta es lineal a los parámetros  $\beta_j$ . En el MPL, los  $\beta_j$  miden la variación de la probabilidad de éxito de variar  $x_j$  **ceteris paribus**:



$$\Delta P(y = 1|X) = \beta_j \Delta x_j \quad [4]$$

### 3.1.1 Ejemplo en la clase

Los determinantes del desempleo

$$P(de = 1|educ) = \beta_0 + \beta_1 educ + u \quad ej1$$

$$P(de = 1|educ) = 0.23 - 1.04educ + u \quad ej2$$

Donde:

- de: Desempleo, 1 si estas desempleado. 0 otro caso
- educ: años de educación

El modelo de regresión lineal múltiple permite estimar el efecto de diversas variables explicativas sobre un evento cualitativo. Entonces la mecánica de los **MCO** es la misma de siempre:

$$\hat{y} = \hat{\beta}_0 + \hat{\beta}_1 x_1 + \hat{\beta}_2 x_2 + \dots + \hat{\beta}_k x_k \quad [5]$$

Donde:

- $\hat{y}$ : es la probabilidad de éxito predicha
- $\hat{\beta}_0$ : es la probabilidad de éxito cuando cada una de las  $x_j = 0$
- $\hat{\beta}_1$ : mide la variación de la probabilidad de éxito predicha cuando  $x_1$  varia en una unidad, mientras las demás permanecen constantes.
- $\hat{\beta}_j$ : mide la variación de la probabilidad de éxito predicha cuando  $x_j$  varia en una unidad, mientras las demás permanecen constantes.

**¡¡Concepto clave: para interpretar correctamente un MPL, debe saberse qué es lo que constituye el éxito!!**

**Recomendación:** la variable dependiente debe describir el nombre del evento cuando  $y = 1$

Por ejemplo, si estudiamos los determinantes del desempleo, la variable  $y$  debe llamarse desempleo

### 3.2 Ejemplo 1: Determinantes de la denegación en solicitudes de hipoteca en el mercado inmobiliario (Stock and Watson 2012)

- $denegar = 1$  le negaron la hipoteca y 0 otro caso

Variable explicativa:

- $\frac{P}{I}$ : Ratio Pagos-ingresos

```
pacman::p_load(AER,
                stargazer,
                sandwich)

data("HMDA")
str(HMDA)
```

```
'data.frame': 2380 obs. of 14 variables:
 $ deny      : Factor w/ 2 levels "no","yes": 1 1 1 1 1 1 1 1 2 1 ...
 $ pirat     : num 0.221 0.265 0.372 0.32 0.36 ...
 $ hirat     : num 0.221 0.265 0.248 0.25 0.35 ...
 $ lvrat     : num 0.8 0.922 0.92 0.86 0.6 ...
 $ chist     : Factor w/ 6 levels "1","2","3","4",...: 5 2 1 1 1 1 1 2 2 2 ...
 $ mhist     : Factor w/ 4 levels "1","2","3","4": 2 2 2 2 1 1 2 2 2 1 ...
 $ phist     : Factor w/ 2 levels "no","yes": 1 1 1 1 1 1 1 1 1 1 ...
 $ unemp     : num 3.9 3.2 3.2 4.3 3.2 ...
 $ selfemp   : Factor w/ 2 levels "no","yes": 1 1 1 1 1 1 1 1 1 1 ...
 $ insurance : Factor w/ 2 levels "no","yes": 1 1 1 1 1 1 1 1 2 1 ...
 $ condomin  : Factor w/ 2 levels "no","yes": 1 1 1 1 1 1 2 1 1 1 ...
 $ afam      : Factor w/ 2 levels "no","yes": 1 1 1 1 1 1 1 1 1 1 ...
 $ single    : Factor w/ 2 levels "no","yes": 1 2 1 1 1 1 2 1 1 2 ...
 $ hschool   : Factor w/ 2 levels "no","yes": 2 2 2 2 2 2 2 2 2 2 ...
```

El objetivo es estimar la siguiente ecuación

$$P(Y = 1|x_1) = \beta_0 + \beta_1 x_1 + u \quad [6]$$

ahora usando nuestra ejemplo:

$$P(deny = 1|P/I) = \beta_0 + \beta_1 P/I + u \quad [7]$$

Miremos las variables que ingresan. Primero hacemos binaria a la variable *deny*

```
HMDA$deny <- ifelse(HMDA$deny=="yes",
                    1,
                    0)
# Estimar el modelo de probabilidad lineal

denymod1 <- lm(deny~pirat,
               HMDA)
stargazer(denymod1,
          type = "text")
```

```
=====
                        Dependent variable:
-----
                        deny
-----
pirat                    0.604***
                        (0.061)

Constant                -0.080***
                        (0.021)

-----
Observations              2,380
R2                        0.040
Adjusted R2              0.039
Residual Std. Error      0.318 (df = 2378)
F Statistic              98.406*** (df = 1; 2378)
=====
Note:                    *p<0.1; **p<0.05; ***p<0.01
```

Seria  $\widehat{\beta}_1 = 0.604 \times 0.01 \approx 0.06$

Una vez que tengo el MPL, puedo graficar

```
plot(x = HMDA$pirat,
     y = HMDA$deny,
     main = "Gráfico de dispersión de las denegaciones de hipoteca y el ratio pagos-ingresos",
     xlab = "ratio P/I",
     ylab = "Denegar",
     pch = 20,
     ylim = c(-0.4,1.4),
```

```

    cex.main = 0.8)

# Añadir las líneas horizontales

abline(h=1, lty = 2, col = "darkred")
abline(h=0, lty = 2, col = "darkred")

text(2.5, 0.9,
     cex = 0.8,
     "Hipoteca denegada")

text(2.5, -0.1,
     cex = 0.8,
     "Hipoteca concedida")

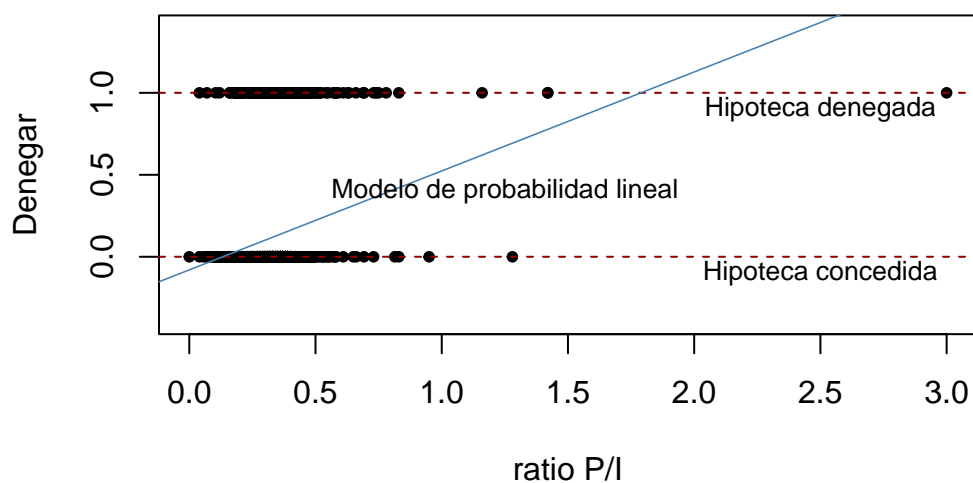
# Añadiendo la línea del MPL

abline(denymod1,
      lwd = 0.8,
      col = "steelblue")

text(1.25, 0.4,
     cex = 0.8,
     "Modelo de probabilidad lineal")

```

### Gráfico de dispersión de las denegaciones de hipoteca y el ratio pagos-ingresos



Presentación de la regresión

```
library(stargazer)
library(sandwich)
eshr <- list(sqrt(diag(vcovHC(denymod1,
                             type = "HC1"))))

stargazer(denymod1,denymod1,
          type = "text",
          se = eshr)
```

| Dependent variable: |                     |                      |
|---------------------|---------------------|----------------------|
|                     | deny                |                      |
|                     | (1)                 | (2)                  |
| pirat               | 0.604***<br>(0.098) | 0.604***<br>(0.061)  |
| Constant            | -0.080**<br>(0.032) | -0.080***<br>(0.021) |

```

-----
Observations                2,380          2,380
R2                          0.040          0.040
Adjusted R2                 0.039          0.039
Residual Std. Error (df = 2378) 0.318          0.318
F Statistic (df = 1; 2378)    98.406***      98.406***
=====
Note:                        *p<0.1; **p<0.05; ***p<0.01

```

Como los modelos de regresión lineal simple poseen el problema de sesgo de variable omitida, y de debido a que el gráfico muestra comportamientos que no son solo explicados por la variable independiente (*pirat*), se añade otra variable que puede ayudar a explicar el fenómeno. La variable es respecto a la consecución de hipoteca a las personas negras (*afam*)

```

colnames(HMDA)[13] <- "negra"

denymod2 <- lm(deny ~
               pirat +
               negra,
               data = HMDA)

eshr <- list(sqrt(diag(vcovHC(denymod1,
                              type = "HC1"))),
             sqrt(diag(vcovHC(denymod2,
                              type = "HC1"))))

stargazer(denymod1,
          denymod2,
          type = "text",
          se = eshr,
          df = F,
          report = "vcts*")

```

```

=====
Dependent variable:
-----
               deny
(1)              (2)
-----

```

|          |                                   |                                    |
|----------|-----------------------------------|------------------------------------|
| pirat    | 0.604<br>t = 6.128<br>(0.098)***  | 0.597<br>t = 6.247<br>(0.096)***   |
| negrayes |                                   | 0.047<br>t = 3.387<br>(0.014)***   |
| Constant | -0.080<br>t = -2.500<br>(0.032)** | -0.096<br>t = -3.105<br>(0.031)*** |

|                     |           |           |
|---------------------|-----------|-----------|
| Observations        | 2,380     | 2,380     |
| R2                  | 0.040     | 0.045     |
| Adjusted R2         | 0.039     | 0.044     |
| Residual Std. Error | 0.318     | 0.318     |
| F Statistic         | 98.406*** | 55.614*** |

=====

Note:                    \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Miremos los valores ajustados

$\hat{y}_i$

```
# modelo con un solo regresor
summary(denymod1$fitted.values)
```

| Min.     | 1st Qu. | Median  | Mean    | 3rd Qu. | Max.    |
|----------|---------|---------|---------|---------|---------|
| -0.07991 | 0.08908 | 0.11926 | 0.11975 | 0.14340 | 1.73070 |

```
# modelo con dos regresores
summary(denymod2$fitted.values)
```

| Min.     | 1st Qu. | Median  | Mean    | 3rd Qu. | Max.    |
|----------|---------|---------|---------|---------|---------|
| -0.09614 | 0.08800 | 0.11874 | 0.11975 | 0.14859 | 1.69459 |

### 3.2.1 Porcentaje predicho correctamente

Mirada a los valores ajustados

```
denymod2$fitted.values
```

|              |              |              |              |              |
|--------------|--------------|--------------|--------------|--------------|
| 1            | 2            | 3            | 4            | 5            |
| 0.0357740938 | 0.1088880900 | 0.1259074499 | 0.0948681447 | 0.1187445298 |
| 6            | 7            | 8            | 9            | 10           |
| 0.0471153745 | 0.1596254083 | 0.0709917596 | 0.0888990484 | 0.0581507716 |
| 11           | 12           | 13           | 14           | 15           |
| 0.1178417344 | 0.1357490232 | 0.0709917596 | 0.1187445298 | 0.0113007969 |
| 16           | 17           | 18           | 19           | 20           |
| 0.1187445298 | 0.0411462782 | 0.0948681447 | 0.0888990484 | 0.1715636008 |
| 21           | 22           | 23           | 24           | 25           |
| 0.1247136260 | 0.1366518186 | 0.1417181195 | 0.1366518186 | 0.1476872157 |
| 26           | 27           | 28           | 29           | 30           |
| 0.1178417344 | 0.1715636008 | 0.1297799269 | 0.0888990484 | 0.1059035418 |
| 31           | 32           | 33           | 34           | 35           |
| 0.1655945046 | 0.1247136260 | 0.1596254083 | 0.1715636008 | 0.1068063372 |
| 36           | 37           | 38           | 39           | 40           |
| 0.1306827223 | 0.1664973000 | 0.1127754335 | 0.1306827223 | 0.1715636008 |
| 41           | 42           | 43           | 44           | 45           |
| 0.1247136260 | 0.1485900111 | 0.1127754335 | 0.1485900111 | 0.1536563120 |
| 46           | 47           | 48           | 49           | 50           |
| 0.0769608559 | 0.0650226633 | 0.1715636008 | 0.1068063372 | 0.1655945046 |
| 51           | 52           | 53           | 54           | 55           |
| 0.1536563120 | 0.0650226633 | 0.0462125791 | 0.1835017934 | 0.1187445298 |
| 56           | 57           | 58           | 59           | 60           |
| 0.0912866846 | 0.1068063372 | 0.1488810396 | 0.1476872157 | 0.1888739891 |
| 61           | 62           | 63           | 64           | 65           |
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| 0.1068063372 | 0.0345802700 | 0.1417181195 | 0.0948681447 | 0.1178417344 |



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| 91           | 92           | 93           | 94           | 95           |
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| 101          | 102          | 103          | 104          | 105          |
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| 291          | 292           | 293          | 294          | 295           |
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| 306          | 307          | 308           | 309           | 310           |
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| 316          | 317          | 318           | 319           | 320           |
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| 366          | 367          | 368           | 369           | 370           |
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| 396          | 397          | 398           | 399           | 400           |
| 0.1127754335 | 0.0948681447 | 0.1306827223  | 0.1127754335  | 0.1187445298  |
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| 426          | 427          | 428           | 429           | 430           |
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| 431          | 432          | 433           | 434           | 435           |
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| 436          | 437          | 438           | 439           | 440           |
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| 456          | 457          | 458           | 459           | 460           |
| 0.1360474735 | 0.2300607398 | 0.1358161488  | 0.0483091983  | 0.3169185078  |
| 461          | 462          | 463           | 464           | 465           |
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| 466          | 467          | 468           | 469           | 470           |
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| 481          | 482          | 483           | 484           | 485           |
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| 491          | 492          | 493           | 494           | 495           |
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| 496          | 497          | 498           | 499           | 500           |
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| 511          | 512          | 513           | 514           | 515           |
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| 516          | 517          | 518           | 519           | 520           |
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| 521           | 522           | 523          | 524          | 525           |
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| 561           | 562           | 563          | 564          | 565           |
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| 566           | 567           | 568          | 569          | 570           |
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| 571           | 572           | 573          | 574          | 575           |
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| 581           | 582           | 583          | 584          | 585           |
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| 591           | 592           | 593          | 594          | 595           |
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| 626           | 627           | 628          | 629          | 630           |

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| 641           | 642          | 643          | 644          | 645           |
| 0.0650226633  | 0.1724663962 | 0.0948681447 | 0.1476872157 | 0.1784354925  |
| 646           | 647          | 648          | 649          | 650           |
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| 666           | 667          | 668          | 669          | 670           |
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| 671           | 672          | 673          | 674          | 675           |
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| 676           | 677          | 678          | 679          | 680           |
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| 0.1476872157  | 0.0888990484 | 0.0769608559 | 0.0232389894 | 0.1724663962  |
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| 711           | 712          | 713          | 714          | 715           |
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| 736           | 737          | 738          | 739          | 740          |
| 0.0829299521  | 0.1420240144 | 0.0983824792 | 0.1396363667 | 0.1655945046 |
| 741           | 742          | 743          | 744          | 745          |
| 0.1605282037  | 0.1366518186 | 0.1008372410 | 0.1127754335 | 0.1008372410 |
| 746           | 747          | 748          | 749          | 750          |
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| 0.1008372410  | 0.0709917596 | 0.1187445298 | 0.2193163710 | 0.0829299521 |
| 756           | 757          | 758          | 759          | 760          |
| 0.1775326971  | 0.1238108307 | 0.1008372410 | 0.0292080857 | 0.0888990484 |
| 761           | 762          | 763          | 764          | 765          |
| 0.0641198679  | 0.1655945046 | 0.1127754335 | 0.1715636008 | 0.1536563120 |
| 766           | 767          | 768          | 769          | 770          |
| 0.1008372410  | 0.1357490232 | 0.1571183988 | 0.1545591074 | 0.1775326971 |
| 771           | 772          | 773          | 774          | 775          |
| 0.1596254083  | 0.1476872157 | 0.0471153745 | 0.1183789540 | 0.1417181195 |
| 776           | 777          | 778          | 779          | 780          |
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| 781           | 782          | 783          | 784          | 785          |
| 0.1596254083  | 0.1118726381 | 0.0530844708 | 0.0769608559 | 0.1125889347 |
| 786           | 787          | 788          | 789          | 790          |
| 0.1417181195  | 0.1357490232 | 0.1715636008 | 0.2969146226 | 0.1008372410 |
| 791           | 792          | 793          | 794          | 795          |
| 0.0462125791  | 0.1775326971 | 0.1068063372 | 0.1366518186 | 0.1724663962 |
| 796           | 797          | 798          | 799          | 800          |
| 0.2551309487  | 0.1605282037 | 0.1357490232 | 0.2252854673 | 0.0939653493 |
| 801           | 802          | 803          | 804          | 805          |
| 0.0351771819  | 0.0351771819 | 0.0581507716 | 0.3446673928 | 0.2560337441 |
| 806           | 807          | 808          | 809          | 810          |
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| 0.1068063372  | 0.1536563120 | 0.1187445298 | 0.2261882627 | 0.1127754335 |
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| 0.0650226633 | 0.0650226633 | 0.1187445298 | 0.0292080857  | 0.1297799269 |
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| 0.1068063372 | 0.0769608559 | 0.1894708897 | 0.0829299521  | 0.1059035418 |
| 856          | 857          | 858          | 859           | 860          |
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| 861          | 862          | 863          | 864           | 865          |
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| 0.1068063372  | 0.1127754335 | 0.1476872157 | 0.1417181195  | 0.0820271567 |
| 961           | 962          | 963          | 964           | 965          |
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| 971           | 972          | 973          | 974           | 975          |
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| 976           | 977          | 978          | 979           | 980          |
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| 0.1366518186  | 0.1366518186 | 0.0581507716 | 0.1775326971  | 0.1775326971 |
| 986           | 987          | 988          | 989           | 990          |
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| 0.1655945046  | 0.1402332673 | 0.1655945046  | 0.1187445298 | 0.1118726381  |
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| 1341         | 1342         | 1343         | 1344         | 1345          |
| 0.0172698931 | 0.0172698931 | 0.0888990484 | 0.1187445298 | 0.0292080857  |
| 1346         | 1347         | 1348         | 1349         | 1350          |
| 0.1008372410 | 0.1655945046 | 0.1715636008 | 0.1127754335 | 0.2014090822  |
| 1351         | 1352         | 1353         | 1354         | 1355          |
| 0.1068063372 | 0.0471153745 | 0.1775326971 | 0.1306827223 | 0.0113007969  |
| 1356         | 1357         | 1358         | 1359         | 1360          |
| 0.1068063372 | 0.1476872157 | 0.0530844708 | 0.1306827223 | 0.1127754335  |
| 1361         | 1362         | 1363         | 1364         | 1365          |
| 0.1775326971 | 0.1715636008 | 0.1306827223 | 0.1187445298 | 0.1068063372  |
| 1366         | 1367         | 1368         | 1369         | 1370          |
| 0.1187445298 | 0.0411462782 | 0.1297799269 | 0.0769608559 | 0.1366518186  |
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| 1376         | 1377         | 1378         | 1379         | 1380          |
| 0.1068063372 | 0.1068063372 | 0.1306827223 | 0.1306827223 | 0.1596254083  |

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| 1381          | 1382         | 1383          | 1384         | 1385          |
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| 1386          | 1387         | 1388          | 1389         | 1390          |
| 0.1835017934  | 0.0700889642 | 0.0471153745  | 0.1724663962 | 0.3148219114  |
| 1391          | 1392         | 1393          | 1394         | 1395          |
| 0.1118726381  | 0.2321573590 | 0.1417181195  | 0.0521816754 | 0.1844045888  |
| 1396          | 1397         | 1398          | 1399         | 1400          |
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| 1406          | 1407         | 1408          | 1409         | 1410          |
| 0.0641198679  | 0.0793484921 | 0.1256015550  | 0.1518655877 | 0.0238359013  |
| 1411          | 1412         | 1413          | 1414         | 1415          |
| 0.1082911781  | 0.1176626574 | 0.2133472748  | 0.0634110046 | 0.1954399859  |
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| 0.0736181651  | 0.1297799269 | 0.1118726381  | 0.1492988745 | 0.0872873897  |
| 1421          | 1422         | 1423          | 1424         | 1425          |
| 0.1223856821  | 0.2128100552 | 0.0223361940  | 0.1187445298 | 0.1485900111  |
| 1426          | 1427         | 1428          | 1429         | 1430          |
| 0.1476872157  | 0.1306827223 | 0.1417181195  | 0.1417181195 | 0.1685790527  |
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| 0.0709917596  | 0.1127754335 | 0.0417431901  | 0.0888990484 | -0.0280952408 |
| 1436          | 1437         | 1438          | 1439         | 1440          |
| 0.0829299521  | 0.1220201063 | 0.1605282037  | 0.1127754335 | 0.1476872157  |
| 1441          | 1442         | 1443          | 1444         | 1445          |
| 0.1545591074  | 0.2491618524 | 0.1894708897  | 0.1775326971 | 0.1476872157  |
| 1446          | 1447         | 1448          | 1449         | 1450          |
| 0.0820271567  | 0.1306827223 | 0.1306827223  | 0.1306827223 | 0.1775326971  |
| 1451          | 1452         | 1453          | 1454         | 1455          |
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| 1466          | 1467         | 1468          | 1469         | 1470          |
| 0.1596254083  | 0.2482739235 | 0.1715636008  | 0.1229229017 | 0.1945520570  |
| 1471          | 1472         | 1473          | 1474         | 1475          |
| 0.1420240144  | 0.1199383536 | 0.1545591074  | 0.1611251042 | 0.1187445298  |
| 1476          | 1477         | 1478          | 1479         | 1480          |
| 0.1715636008  | 0.1536563120 | 0.1297799269  | 0.1775326971 | 0.1306827223  |
| 1481          | 1482         | 1483          | 1484         | 1485          |
| 0.1417181195  | 0.0530844708 | 0.1118726381  | 0.1894708897 | 0.1187445298  |
| 1486          | 1487         | 1488          | 1489         | 1490          |

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| 0.0948681447 | 0.1775326971 | 0.0650226633  | 0.0829299521  | 0.1476872157 |
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| 0.0709917596 | 0.0769608559 | 0.0948681447  | 0.0888990484  | 0.1835017934 |
| 1496         | 1497         | 1498          | 1499          | 1500         |
| 0.0951069140 | 0.1228631980 | 0.1485303302  | 0.0590535670  | 0.1835017934 |
| 1501         | 1502         | 1503          | 1504          | 1505         |
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| 1506         | 1507         | 1508          | 1509          | 1510         |
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| 0.1476872157 | 0.1187445298 | 0.1247136260  | 0.0351771819  | 0.1068063372 |
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| 0.1068063372 | 0.1426209149 | -0.0364519733 | 0.1894708897  | 0.0709917596 |
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| 0.1187445298 | 0.1835017934 | 0.0820271567  | 0.1655945046  | 0.1068063372 |
| 1531         | 1532         | 1533          | 1534          | 1535         |
| 0.1417181195 | 0.1366518186 | 0.1357490232  | 0.1247136260  | 0.1545591074 |
| 1536         | 1537         | 1538          | 1539          | 1540         |
| 0.0650226633 | 0.1715636008 | 0.1417181195  | 0.1238108307  | 0.1247136260 |
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| 0.1655945046 | 0.1187445298 | 0.1008372410  | 0.1238108307  | 0.0590535670 |
| 1546         | 1547         | 1548          | 1549          | 1550         |
| 0.0769608559 | 0.0948681447 | 0.0292080857  | 0.1417181195  | 0.0769608559 |
| 1551         | 1552         | 1553          | 1554          | 1555         |
| 0.1655945046 | 0.1187445298 | 0.0820271567  | 0.0530844708  | 0.1596254083 |
| 1556         | 1557         | 1558          | 1559          | 1560         |
| 0.1059035418 | 0.1476872157 | 0.0888990484  | 0.1068063372  | 0.0829299521 |
| 1561         | 1562         | 1563          | 1564          | 1565         |
| 0.1008372410 | 0.1366518186 | 0.1655945046  | 0.0709917596  | 0.1059035418 |
| 1566         | 1567         | 1568          | 1569          | 1570         |
| 0.1596254083 | 0.0769608559 | 0.1068063372  | 0.0829299521  | 0.0999344456 |
| 1571         | 1572         | 1573          | 1574          | 1575         |
| 0.0709917596 | 0.1655945046 | 0.1596254083  | 0.0888990484  | 0.0590535670 |
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| 0.0650226633 | 0.0948681447 | 0.1357490232  | 0.1306827223  | 0.0650226633 |
| 1581         | 1582         | 1583          | 1584          | 1585         |
| 0.0650226633 | 0.0879962530 | 0.1008372410  | 0.1297799269  | 0.1247136260 |
| 1586         | 1587         | 1588          | 1589          | 1590         |
| 0.1596254083 | 0.0829299521 | 0.3625746816  | 0.0471153745  | 0.0530844708 |
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| 0.1118726381 | 0.1238108307 | 0.1068063372  | 0.1008372410  | 0.2491618524 |

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| 1596          | 1597         | 1598         | 1599         | 1600         |
| 0.2014090822  | 0.0948681447 | 0.1664973000 | 0.1775326971 | 0.1536563120 |
| 1601          | 1602         | 1603         | 1604         | 1605         |
| 0.0829299521  | 0.1835017934 | 0.0709917596 | 0.1417181195 | 0.1485900111 |
| 1606          | 1607         | 1608         | 1609         | 1610         |
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| 1611          | 1612         | 1613         | 1614         | 1615         |
| 0.0999344456  | 0.1068063372 | 0.1655945046 | 0.1476872157 | 0.0999344456 |
| 1616          | 1617         | 1618         | 1619         | 1620         |
| 0.0999344456  | 0.0650226633 | 0.0999344456 | 0.0411462782 | 0.0641198679 |
| 1621          | 1622         | 1623         | 1624         | 1625         |
| 0.0530844708  | 0.1059035418 | 0.0113007969 | 0.1068063372 | 0.1655945046 |
| 1626          | 1627         | 1628         | 1629         | 1630         |
| 0.1059035418  | 0.1775326971 | 0.1426209149 | 0.1297799269 | 0.0351771819 |
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| 1636          | 1637         | 1638         | 1639         | 1640         |
| 0.1476872157  | 0.1417181195 | 0.1426209149 | 0.1187445298 | 0.0888990484 |
| 1641          | 1642         | 1643         | 1644         | 1645         |
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| 1646          | 1647         | 1648         | 1649         | 1650         |
| 0.0948681447  | 0.1306827223 | 0.1247136260 | 0.1536563120 | 0.1366518186 |
| 1651          | 1652         | 1653         | 1654         | 1655         |
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| 1661          | 1662         | 1663         | 1664         | 1665         |
| 0.1357490232  | 0.1297799269 | 0.1178417344 | 0.0888990484 | 0.0888990484 |
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| 0.1775326971  | 0.1068063372 | 0.1118726381 | 0.1178417344 | 0.0939653493 |
| 1671          | 1672         | 1673         | 1674         | 1675         |
| 0.1178417344  | 0.1357490232 | 0.0760580605 | 0.1536563120 | 0.0700889642 |
| 1676          | 1677         | 1678         | 1679         | 1680         |
| 0.1417181195  | 0.1426209149 | 0.1178417344 | 0.0888990484 | 0.0888990484 |
| 1681          | 1682         | 1683         | 1684         | 1685         |
| 0.1596254083  | 0.1247136260 | 0.0948681447 | 0.1068063372 | 0.1068063372 |
| 1686          | 1687         | 1688         | 1689         | 1690         |
| 0.1008372410  | 0.0351771819 | 0.1715636008 | 0.1963427813 | 0.1655945046 |
| 1691          | 1692         | 1693         | 1694         | 1695         |
| 0.1187445298  | 0.1536563120 | 0.1476872157 | 0.1178417344 | 0.1476872157 |
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| 1701          | 1702         | 1703         | 1704         | 1705         |

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| 0.1238108307  | 0.0650226633  | 0.1366518186  | 0.2014090822  | 0.1357490232 |
| 1706          | 1707          | 1708          | 1709          | 1710         |
| 0.1596254083  | 0.0769608559  | 0.0769608559  | 0.0709917596  | 0.1008372410 |
| 1711          | 1712          | 1713          | 1714          | 1715         |
| 0.2073781785  | 0.0888990484  | 0.1059035418  | 0.1068063372  | 0.1963427813 |
| 1716          | 1717          | 1718          | 1719          | 1720         |
| 0.1297799269  | 0.1476872157  | 0.1357490232  | 0.2193163710  | 0.0411462782 |
| 1721          | 1722          | 1723          | 1724          | 1725         |
| -0.0304828771 | 0.1715636008  | 0.0939653493  | 0.0172698931  | 0.1059035418 |
| 1726          | 1727          | 1728          | 1729          | 1730         |
| 0.1008372410  | 0.0650226633  | 0.0709917596  | 0.1247136260  | 0.0709917596 |
| 1731          | 1732          | 1733          | 1734          | 1735         |
| 0.2014090822  | 0.1366518186  | 0.0590535670  | 0.1008372410  | 0.1187445298 |
| 1736          | 1737          | 1738          | 1739          | 1740         |
| 0.1476872157  | 0.1844045888  | 0.2909455263  | 0.1655945046  | 0.1596254083 |
| 1741          | 1742          | 1743          | 1744          | 1745         |
| 0.0700889642  | -0.0304828771 | 0.1247136260  | 0.0462125791  | 0.1297799269 |
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| 1751          | 1752          | 1753          | 1754          | 1755         |
| 0.0650226633  | 0.2849764300  | 0.1357490232  | 0.1357490232  | 0.1536563120 |
| 1756          | 1757          | 1758          | 1759          | 1760         |
| 0.0709917596  | 0.1247136260  | 0.1357490232  | 0.1417181195  | 0.1476872157 |
| 1761          | 1762          | 1763          | 1764          | 1765         |
| 0.0530844708  | 0.1844045888  | 0.0590535670  | 0.0948681447  | 0.1835017934 |
| 1766          | 1767          | 1768          | 1769          | 1770         |
| 0.1417181195  | 0.0530844708  | -0.0304828771 | 0.1118726381  | 0.1357490232 |
| 1771          | 1772          | 1773          | 1774          | 1775         |
| 0.1655945046  | 0.0471153745  | 0.1655945046  | 0.1366518186  | 0.1596254083 |
| 1776          | 1777          | 1778          | 1779          | 1780         |
| 0.1476872157  | 0.1536563120  | 0.2551309487  | 0.0829299521  | 0.0471153745 |
| 1781          | 1782          | 1783          | 1784          | 1785         |
| 0.1297799269  | 0.1596254083  | 0.0879962530  | 0.0879962530  | 0.1187445298 |
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| 0.0820271567  | 0.0590535670  | 0.0769608559  | 0.1357490232  | 0.1417181195 |
| 1796          | 1797          | 1798          | 1799          | 1800         |
| 0.1775326971  | 0.1068063372  | 0.1068063372  | 0.1238108307  | 0.1357490232 |
| 1801          | 1802          | 1803          | 1804          | 1805         |
| 0.0351771819  | 0.1536563120  | 0.1357490232  | 0.0888990484  | 0.0411462782 |
| 1806          | 1807          | 1808          | 1809          | 1810         |
| 0.1844045888  | 0.2014090822  | 0.1366518186  | 0.2014090822  | 0.1835017934 |



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| 1811         | 1812          | 1813         | 1814          | 1815         |
| 0.1476872157 | 0.1178417344  | 0.2142500702 | -0.0543592622 | 0.2133472748 |
| 1816         | 1817          | 1818         | 1819          | 1820         |
| 0.1187445298 | 0.2014090822  | 0.2133472748 | 0.1784354925  | 0.1844045888 |
| 1821         | 1822          | 1823         | 1824          | 1825         |
| 0.1306827223 | 0.1903736851  | 0.0709917596 | 0.1247136260  | 0.1596254083 |
| 1826         | 1827          | 1828         | 1829          | 1830         |
| 0.1426209149 | 0.1655945046  | 0.1068063372 | 0.1724663962  | 0.1426209149 |
| 1831         | 1832          | 1833         | 1834          | 1835         |
| 0.1306827223 | 0.0113007969  | 0.1306827223 | 0.1715636008  | 0.0462125791 |
| 1836         | 1837          | 1838         | 1839          | 1840         |
| 0.1715636008 | 0.0232389894  | 0.1417181195 | 0.1417181195  | 0.1655945046 |
| 1841         | 1842          | 1843         | 1844          | 1845         |
| 0.1068063372 | 0.1536563120  | 0.1187445298 | 0.0172698931  | 0.1536563120 |
| 1846         | 1847          | 1848         | 1849          | 1850         |
| 0.0879962530 | -0.0125755882 | 0.1127754335 | 0.1008372410  | 0.0581507716 |
| 1851         | 1852          | 1853         | 1854          | 1855         |
| 0.1059035418 | 0.1068063372  | 0.1059035418 | 0.1059035418  | 0.0351771819 |
| 1856         | 1857          | 1858         | 1859          | 1860         |
| 0.0769608559 | 0.1238108307  | 0.0709917596 | 0.0530844708  | 0.1357490232 |
| 1861         | 1862          | 1863         | 1864          | 1865         |
| 0.1655945046 | 0.0471153745  | 0.1068063372 | 0.1247136260  | 0.1068063372 |
| 1866         | 1867          | 1868         | 1869          | 1870         |
| 0.0709917596 | 0.1187445298  | 0.1187445298 | 0.1127754335  | 0.0471153745 |
| 1871         | 1872          | 1873         | 1874          | 1875         |
| 0.1306827223 | 0.1127754335  | 0.1426209149 | 0.1426209149  | 0.1187445298 |
| 1876         | 1877          | 1878         | 1879          | 1880         |
| 0.1306827223 | 0.1426209149  | 0.1664973000 | 0.1485900111  | 0.1247136260 |
| 1881         | 1882          | 1883         | 1884          | 1885         |
| 0.1008372410 | 0.1366518186  | 0.1417181195 | 0.1306827223  | 0.0760580605 |
| 1886         | 1887          | 1888         | 1889          | 1890         |
| 0.2133472748 | 0.0172698931  | 0.1366518186 | 0.1426209149  | 0.1664973000 |
| 1891         | 1892          | 1893         | 1894          | 1895         |
| 0.1536563120 | 0.1655945046  | 0.0650226633 | 0.1366518186  | 0.1187445298 |
| 1896         | 1897          | 1898         | 1899          | 1900         |
| 0.1715636008 | 0.1187445298  | 0.1605282037 | 0.1366518186  | 0.1008372410 |
| 1901         | 1902          | 1903         | 1904          | 1905         |
| 0.2073781785 | 0.1068063372  | 0.0700889642 | 0.1178417344  | 0.2014090822 |
| 1906         | 1907          | 1908         | 1909          | 1910         |
| 0.1835017934 | 0.3924201630  | 0.0650226633 | 0.0939653493  | 0.1247136260 |
| 1911         | 1912          | 1913         | 1914          | 1915         |
| 0.2073781785 | 0.1536563120  | 0.2969146226 | 0.1426209149  | 0.1545591074 |
| 1916         | 1917          | 1918         | 1919          | 1920         |

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| 0.2014090822  | 0.1247136260 | 0.1366518186 | 0.1835017934 | 0.1178417344 |
| 1921          | 1922         | 1923         | 1924         | 1925         |
| 0.1536563120  | 0.0530844708 | 0.1127754335 | 0.1008372410 | 0.1247136260 |
| 1926          | 1927         | 1928         | 1929         | 1930         |
| 0.0590535670  | 0.0471153745 | 0.7983187096 | 0.7983187096 | 0.1366518186 |
| 1931          | 1932         | 1933         | 1934         | 1935         |
| 0.1545591074  | 0.1485900111 | 0.1247136260 | 0.1059035418 | 0.1247136260 |
| 1936          | 1937         | 1938         | 1939         | 1940         |
| 0.2073781785  | 0.1894708897 | 0.2312545636 | 0.1187445298 | 0.1536563120 |
| 1941          | 1942         | 1943         | 1944         | 1945         |
| 0.0769608559  | 0.1835017934 | 0.0888990484 | 0.1426209149 | 0.1366518186 |
| 1946          | 1947         | 1948         | 1949         | 1950         |
| 0.1485900111  | 0.1775326971 | 0.1008372410 | 0.1835017934 | 0.0769608559 |
| 1951          | 1952         | 1953         | 1954         | 1955         |
| 0.1187445298  | 0.1187445298 | 0.1844045888 | 0.1536563120 | 0.1187445298 |
| 1956          | 1957         | 1958         | 1959         | 1960         |
| 0.1536563120  | 0.1775326971 | 0.1306827223 | 0.1426209149 | 0.2312545636 |
| 1961          | 1962         | 1963         | 1964         | 1965         |
| 0.1127754335  | 0.1485900111 | 0.1775326971 | 0.1306827223 | 0.0769608559 |
| 1966          | 1967         | 1968         | 1969         | 1970         |
| 0.1187445298  | 0.1835017934 | 0.1954399859 | 0.3267601040 | 0.1059035418 |
| 1971          | 1972         | 1973         | 1974         | 1975         |
| 0.0709917596  | 0.1357490232 | 0.0411462782 | 0.1545591074 | 0.1238108307 |
| 1976          | 1977         | 1978         | 1979         | 1980         |
| 0.0948681447  | 0.1596254083 | 0.1605282037 | 0.1485900111 | 0.1247136260 |
| 1981          | 1982         | 1983         | 1984         | 1985         |
| 0.1366518186  | 0.2252854673 | 0.1306827223 | 0.1008372410 | 0.1068063372 |
| 1986          | 1987         | 1988         | 1989         | 1990         |
| 0.0650226633  | 0.1187445298 | 0.1247136260 | 0.0530844708 | 0.1127754335 |
| 1991          | 1992         | 1993         | 1994         | 1995         |
| 0.0590535670  | 0.1068063372 | 0.1014341415 | 0.1276981742 | 0.0905629662 |
| 1996          | 1997         | 1998         | 1999         | 2000         |
| 0.1846956172  | 0.1118800600 | 0.0596504789 | 0.1429119433 | 0.0333864576 |
| 2001          | 2002         | 2003         | 2004         | 2005         |
| -0.0209323208 | 0.0906897727 | 0.0972557923 | 0.1312796228 | 0.1127754335 |
| 2006          | 2007         | 2008         | 2009         | 2010         |
| 0.0098010896  | 0.0814302448 | 0.1342641710 | 0.1199383536 | 0.0811392278 |
| 2011          | 2012         | 2013         | 2014         | 2015         |
| 0.1420240144  | 0.0751701315 | 0.1163568822 | 0.1109847092 | 0.1327644751 |
| 2016          | 2017         | 2018         | 2019         | 2020         |
| 0.0805423159  | 0.1265043504 | 0.0915777131 | 0.1032248886 | 0.1363459351 |
| 2021          | 2022         | 2023         | 2024         | 2025         |
| -0.0107848582 | 0.0787515802 | 0.0659105922 | 0.1624905718 | 0.1074032377 |

|              |              |               |              |              |
|--------------|--------------|---------------|--------------|--------------|
| 2026         | 2027         | 2028          | 2029         | 2030         |
| 0.1253105266 | 0.1536563120 | 0.1469709306  | 0.1139692573 | 0.1387932637 |
| 2031         | 2032         | 2033          | 2034         | 2035         |
| 0.1125366642 | 0.1566408602 | 0.1303768388  | 0.1050156129 | 0.1363459351 |
| 2036         | 2037         | 2038          | 2039         | 2040         |
| 0.1761598077 | 0.0954650452 | 0.1176104097  | 0.0990465166 | 0.1211321774 |
| 2041         | 2042         | 2043          | 2044         | 2045         |
| 0.0918239042 | 0.2145410986 | 0.1644006808  | 0.0972557923 | 0.1799203447 |
| 2046         | 2047         | 2048          | 2049         | 2050         |
| 0.1817110691 | 0.1195801996 | 0.1044186896  | 0.1579540686 | 0.0820271567 |
| 2051         | 2052         | 2053          | 2054         | 2055         |
| 0.0931967936 | 0.2599062211 | 0.1350327266  | 0.1005387907 | 0.0996434171 |
| 2056         | 2057         | 2058          | 2059         | 2060         |
| 0.1655945046 | 0.0912866846 | 0.1354579948  | 0.1721605014 | 0.1097908854 |
| 2061         | 2062         | 2063          | 2064         | 2065         |
| 0.1715636008 | 0.0965991881 | 0.1229229017  | 0.0817361283 | 0.1223259784 |
| 2066         | 2067         | 2068          | 2069         | 2070         |
| 0.0763639440 | 0.1253105266 | 0.0948681447  | 0.0883021365 | 0.1151630811 |
| 2071         | 2072         | 2073          | 2074         | 2075         |
| 0.1360549181 | 0.1345551994 | 0.1632068570  | 0.0930774204 | 0.0721855834 |
| 2076         | 2077         | 2078          | 2079         | 2080         |
| 0.0805423159 | 0.1235198022 | 0.1187445298  | 0.1267953788 | 0.1271535214 |
| 2081         | 2082         | 2083          | 2084         | 2085         |
| 0.1193414303 | 0.0703948477 | 0.0787515802  | 0.1262655811 | 0.0694994855 |
| 2086         | 2087         | 2088          | 2089         | 2090         |
| 0.1265640541 | 0.0136884331 | 0.0952262987  | 0.1217290779 | 0.1247136260 |
| 2091         | 2092         | 2093          | 2094         | 2095         |
| 0.0942712328 | 0.0868098624 | 0.1512686644  | 0.1211321774 | 0.0841237759 |
| 2096         | 2097         | 2098          | 2099         | 2100         |
| 0.1612370670 | 0.1513954937 | -0.0030250319 | 0.0703948477 | 0.1870832420 |
| 2101         | 2102         | 2103          | 2104         | 2105         |
| 0.1287129096 | 0.1074032377 | 0.0434071023  | 0.1223259784 | 0.1715636008 |
| 2106         | 2107         | 2108          | 2109         | 2110         |
| 0.1638037802 | 0.1166479106 | 0.1057916018  | 0.0823330402 | 0.0894959603 |
| 2111         | 2112         | 2113          | 2114         | 2115         |
| 0.1336672705 | 0.1649976041 | 0.0978526928  | 0.1109847092 | 0.1441057671 |
| 2116         | 2117         | 2118          | 2119         | 2120         |
| 0.0811392278 | 0.0083759410 | 0.1239376372  | 0.0971364076 | 0.0892571910 |
| 2121         | 2122         | 2123          | 2124         | 2125         |
| 0.1159987510 | 0.0894959603 | 0.1211321774  | 0.1524624882 | 0.1047171626 |
| 2126         | 2127         | 2128          | 2129         | 2130         |
| 0.0381617301 | 0.0972557923 | 0.1439266787  | 0.0999344456 | 0.1655945046 |
| 2131         | 2132         | 2133          | 2134         | 2135         |

|              |               |              |               |               |
|--------------|---------------|--------------|---------------|---------------|
| 0.1127754335 | 0.1127754335  | 0.1596254083 | 0.1031592190  | 0.0834074794  |
| 2136         | 2137          | 2138         | 2139          | 2140          |
| 0.1315706513 | 0.1102684240  | 0.1414270911 | 0.0049138657  | 0.1072838759  |
| 2141         | 2142          | 2143         | 2144          | 2145          |
| 0.1210127927 | 0.0188815519  | 0.0099279074 | 0.1187445298  | 0.1420165697  |
| 2146         | 2147          | 2148         | 2149          | 2150          |
| 0.1664973000 | 0.1250643354  | 0.1396363667 | 0.1247136260  | 0.1664973000  |
| 2151         | 2152          | 2153         | 2154          | 2155          |
| 0.1715636008 | 0.1261387746  | 0.1693027825 | 0.1596254083  | 0.1649976041  |
| 2156         | 2157          | 2158         | 2159          | 2160          |
| 0.1835017934 | 0.1068063372  | 0.1388006969 | 0.0888990484  | 0.1307349814  |
| 2161         | 2162          | 2163         | 2164          | 2165          |
| 0.1589762487 | 0.1136111033  | 0.1366518186 | 0.1123575986  | 0.1260865155  |
| 2166         | 2167          | 2168         | 2169          | 2170          |
| 0.1040008547 | 0.1357564450  | 0.1550963270 | 0.0733793958  | 0.1151630811  |
| 2171         | 2172          | 2173         | 2174          | 2175          |
| 0.1890604766 | 0.1484706265  | 0.0198962987 | 0.1811215904  | 0.1546710475  |
| 2176         | 2177          | 2178         | 2179          | 2180          |
| 0.1403452301 | 0.1347342764  | 0.1618339675 | 0.1857700563  | 0.1379650271  |
| 2181         | 2182          | 2183         | 2184          | 2185          |
| 0.0235374397 | 0.2368655059  | 0.1366443854 | -0.0283936911 | 0.0942115404  |
| 2186         | 2187          | 2188         | 2189          | 2190          |
| 0.1137901689 | 0.0496223954  | 0.0939130902 | 0.0654330650  | 0.1554544810  |
| 2191         | 2192          | 2193         | 2194          | 2195          |
| 0.1063885023 | -0.0317363875 | 0.1106191334 | 0.1176700906  | 0.1703697770  |
| 2196         | 2197          | 2198         | 2199          | 2200          |
| 0.1022026971 | 0.0800647887  | 0.0788112725 | 0.1290636304  | 0.1523431036  |
| 2201         | 2202          | 2203         | 2204          | 2205          |
| 0.1239376372 | 0.1900081092  | 0.1127754335 | 0.1838002436  | 0.1895902743  |
| 2206         | 2207          | 2208         | 2209          | 2210          |
| 0.1398154323 | 0.1205352541  | 0.1229229017 | 0.1512089835  | 0.0953382387  |
| 2211         | 2212          | 2213         | 2214          | 2215          |
| 0.0516518890 | 0.1369502689  | 0.0961813531 | 0.1427328549  | 0.2053486848  |
| 2216         | 2217          | 2218         | 2219          | 2220          |
| 0.1353908806 | 0.1051349976  | 0.1059035418 | 0.1177297943  | 0.1142677076  |
| 2221         | 2222          | 2223         | 2224          | 2225          |
| 0.1196921510 | 0.0952859796  | 0.1614235772 | 0.1421359544  | 0.1414793502  |
| 2226         | 2227          | 2228         | 2229          | 2230          |
| 0.1423821456 | 0.0955247489  | 0.1799203447 | 0.0641198679  | -0.0254165762 |
| 2231         | 2232          | 2233         | 2234          | 2235          |
| 0.1575959147 | 0.1927613327  | 0.1469112269 | 0.0749313622  | 0.0923611238  |
| 2236         | 2237          | 2238         | 2239          | 2240          |
| 0.1540218878 | 0.1762791924  | 0.2133472748 | 0.1429716242  | 0.1266834387  |

|              |              |              |               |              |
|--------------|--------------|--------------|---------------|--------------|
| 2241         | 2242         | 2243         | 2244          | 2245         |
| 0.0781546797 | 0.0847803688 | 0.0871680050 | 0.0948681447  | 0.1019116801 |
| 2246         | 2247         | 2248         | 2249          | 2250         |
| 0.1060303483 | 0.0945100021 | 0.0779756027 | 0.1005387907  | 0.1324734467 |
| 2251         | 2252         | 2253         | 2254          | 2255         |
| 0.0555914917 | 0.1393304832 | 0.1262655811 | 0.1645797691  | 0.1008372410 |
| 2256         | 2257         | 2258         | 2259          | 2260         |
| 0.1775923781 | 0.1398080105 | 0.1337866551 | 0.1568199258  | 0.0809601508 |
| 2261         | 2262         | 2263         | 2264          | 2265         |
| 0.0684847387 | 0.1431581344 | 0.1629681104 | 0.1310931240  | 0.0342818198 |
| 2266         | 2267         | 2268         | 2269          | 2270         |
| 0.0608442914 | 0.0966588690 | 0.1161181356 | 0.0877052246  | 0.1154540981 |
| 2271         | 2272         | 2273         | 2274          | 2275         |
| 0.1220872319 | 0.1022101304 | 0.1223185566 | 0.0603667641  | 0.1613564517 |
| 2276         | 2277         | 2278         | 2279          | 2280         |
| 0.1148049271 | 0.1303768388 | 0.1263252848 | 0.1596254083  | 0.1596254083 |
| 2281         | 2282         | 2283         | 2284          | 2285         |
| 0.0053317006 | 0.0521816754 | 0.0829299521 | 0.1068063372  | 0.2491618524 |
| 2286         | 2287         | 2288         | 2289          | 2290         |
| 0.0760580605 | 0.1187445298 | 0.0172698931 | 0.0948681447  | 0.1127754335 |
| 2291         | 2292         | 2293         | 2294          | 2295         |
| 0.0760580605 | 0.0709917596 | 0.0829299521 | 0.1187445298  | 0.0650226633 |
| 2296         | 2297         | 2298         | 2299          | 2300         |
| 0.1306827223 | 0.1536563120 | 0.1118726381 | 0.1247136260  | 0.0848997534 |
| 2301         | 2302         | 2303         | 2304          | 2305         |
| 0.0820942823 | 0.1248330107 | 0.1217290779 | 0.1223259784  | 0.1476872157 |
| 2306         | 2307         | 2308         | 2309          | 2310         |
| 0.1894708897 | 0.0650226633 | 0.0769608559 | 0.0888990484  | 0.1775326971 |
| 2311         | 2312         | 2313         | 2314          | 2315         |
| 0.1715636008 | 0.1775326971 | 0.1536563120 | 0.2014090822  | 0.0948681447 |
| 2316         | 2317         | 2318         | 2319          | 2320         |
| 0.1342641710 | 0.1578346840 | 0.0495030107 | 0.0411462782  | 0.1068063372 |
| 2321         | 2322         | 2323         | 2324          | 2325         |
| 0.1127754335 | 0.1769357966 | 0.1835017934 | 0.2014090822  | 0.0590535670 |
| 2326         | 2327         | 2328         | 2329          | 2330         |
| 0.1605282037 | 0.1068063372 | 0.0232389894 | 0.1187445298  | 0.0948681447 |
| 2331         | 2332         | 2333         | 2334          | 2335         |
| 0.1596254083 | 0.1844045888 | 0.1366518186 | 0.1068063372  | 0.1306827223 |
| 2336         | 2337         | 2338         | 2339          | 2340         |
| 0.1703697770 | 0.0829299521 | 0.1372487191 | 0.0829299521  | 0.1954399859 |
| 2341         | 2342         | 2343         | 2344          | 2345         |
| 0.1068063372 | 0.1059035418 | 0.1127754335 | -0.0424210696 | 0.0590535670 |
| 2346         | 2347         | 2348         | 2349          | 2350         |

|              |              |              |              |              |
|--------------|--------------|--------------|--------------|--------------|
| 0.1664973000 | 0.1596254083 | 0.1366518186 | 0.0888990484 | 0.1426209149 |
| 2351         | 2352         | 2353         | 2354         | 2355         |
| 0.1485900111 | 0.0471153745 | 0.1008372410 | 0.1247136260 | 0.1127754335 |
| 2356         | 2357         | 2358         | 2359         | 2360         |
| 0.1545591074 | 0.1008372410 | 0.1068063372 | 0.1187445298 | 0.1417181195 |
| 2361         | 2362         | 2363         | 2364         | 2365         |
| 0.1417181195 | 0.0650226633 | 0.1008372410 | 0.1306827223 | 0.1187445298 |
| 2366         | 2367         | 2368         | 2369         | 2370         |
| 0.0939653493 | 0.0948681447 | 0.1775326971 | 0.1306827223 | 0.0999344456 |
| 2371         | 2372         | 2373         | 2374         | 2375         |
| 0.1417181195 | 0.1357490232 | 0.1008372410 | 0.1596254083 | 0.1008372410 |
| 2376         | 2377         | 2378         | 2379         | 2380         |
| 0.0888990484 | 0.1297799269 | 0.0590535670 | 0.1417181195 | 0.1596254083 |

```
# Porcentaje predicho correctamente
ppc <- data.frame(denymod2$model$deny, denymod2$fitted.values)
head(ppc)
```

|   | denymod2.model.deny | denymod2.fitted.values |
|---|---------------------|------------------------|
| 1 | 0                   | 0.03577409             |
| 2 | 0                   | 0.10888809             |
| 3 | 0                   | 0.12590745             |
| 4 | 0                   | 0.09486814             |
| 5 | 0                   | 0.11874453             |
| 6 | 0                   | 0.04711537             |

```
# Cambiar de nombre
names(ppc) <- c("deny", "VA")
head(ppc)
```

|   | deny | VA         |
|---|------|------------|
| 1 | 0    | 0.03577409 |
| 2 | 0    | 0.10888809 |
| 3 | 0    | 0.12590745 |
| 4 | 0    | 0.09486814 |
| 5 | 0    | 0.11874453 |
| 6 | 0    | 0.04711537 |

```
# Creando la variable y virgulilla
```

```
ppc$y.c <- ifelse(ppc$VA>0.5,1,0)
```

```
head(ppc)
```

|   | deny | VA         | y.c |
|---|------|------------|-----|
| 1 | 0    | 0.03577409 | 0   |
| 2 | 0    | 0.10888809 | 0   |
| 3 | 0    | 0.12590745 | 0   |
| 4 | 0    | 0.09486814 | 0   |
| 5 | 0    | 0.11874453 | 0   |
| 6 | 0    | 0.04711537 | 0   |

```
tail(ppc)
```

|      | deny | VA         | y.c |
|------|------|------------|-----|
| 2375 | 0    | 0.10083724 | 0   |
| 2376 | 0    | 0.08889905 | 0   |
| 2377 | 0    | 0.12977993 | 0   |
| 2378 | 0    | 0.05905357 | 0   |
| 2379 | 1    | 0.14171812 | 0   |
| 2380 | 1    | 0.15962541 | 0   |

```
# Creando la variable PPC
```

```
ppc$ppc <- ifelse(ppc$deny==ppc$y.c,1,0)
```

```
head(ppc)
```

|   | deny | VA         | y.c | ppc |
|---|------|------------|-----|-----|
| 1 | 0    | 0.03577409 | 0   | 1   |
| 2 | 0    | 0.10888809 | 0   | 1   |
| 3 | 0    | 0.12590745 | 0   | 1   |
| 4 | 0    | 0.09486814 | 0   | 1   |
| 5 | 0    | 0.11874453 | 0   | 1   |
| 6 | 0    | 0.04711537 | 0   | 1   |

```
# Calculando el PPC
```

```
prop.table(table(ppc$ppc))*100
```

|  | 0        | 1        |
|--|----------|----------|
|  | 11.84874 | 88.15126 |

### 3.3 Ejemplo 2: Determinantes del trabajo femenino (Wooldridge 2009)

- $y$ : **inlf**: (la fuerza de trabajo femenino), una variable binaria que indica, si una mujer casada participó en la fuerza de trabajo durante 1975:  $inlf = 1$  la mujer informa haber trabajado fuera de la casa, por un salario ese año, cero otro caso
- $x_1 = nwifeinc$  los ingreso del esposo en miles de dólares (-)
- $x_2 = educ$  años de educación (+)
- $x_3 = exper$  años de experiencia (+)
- $x_4 = exper^2$  años de experiencia al cuadrado (-)
- $x_5 = edad$  en años (-)
- $x_6 = kidslt6$  hijo < 6 años (-)
- $x_7 = kidsge6$  hijos entres 6 y 18 años (+)

```
data("mroz", package = "wooldridge")
str(mroz)
```

```
'data.frame':  753 obs. of  22 variables:
 $ inlf      : int  1 1 1 1 1 1 1 1 1 1 ...
 $ hours     : int  1610 1656 1980 456 1568 2032 1440 1020 1458 1600 ...
 $ kidslt6   : int  1 0 1 0 1 0 0 0 0 0 ...
 $ kidsge6   : int  0 2 3 3 2 0 2 0 2 2 ...
 $ age       : int  32 30 35 34 31 54 37 54 48 39 ...
 $ educ      : int  12 12 12 12 14 12 16 12 12 12 ...
 $ wage      : num  3.35 1.39 4.55 1.1 4.59 ...
 $ repwage   : num  2.65 2.65 4.04 3.25 3.6 ...
 $ hushrs    : int  2708 2310 3072 1920 2000 1040 2670 4120 1995 2100 ...
 $ husage    : int  34 30 40 53 32 57 37 53 52 43 ...
 $ huseduc   : int  12 9 12 10 12 11 12 8 4 12 ...
 $ huswage   : num  4.03 8.44 3.58 3.54 10 ...
 $ faminc    : num  16310 21800 21040 7300 27300 ...
 $ mtr       : num  0.721 0.661 0.692 0.781 0.622 ...
 $ motheduc  : int  12 7 12 7 12 14 14 3 7 7 ...
```



```

$ fatheduc: int  7 7 7 7 14 7 7 3 7 7 ...
$ unem      : num  5 11 5 5 9.5 7.5 5 5 3 5 ...
$ city      : int  0 1 0 0 1 1 0 0 0 0 ...
$ exper     : int  14 5 15 6 7 33 11 35 24 21 ...
$ nwifeinc: num  10.9 19.5 12 6.8 20.1 ...
$ lwage     : num  1.2102 0.3285 1.5141 0.0921 1.5243 ...
$ expersq   : int  196 25 225 36 49 1089 121 1225 576 441 ...
- attr(*, "time.stamp")= chr "25 Jun 2011 23:03"

```

```
# Correr el modelo y crear el objeto
```

```
mroz.mpl <- lm(inlf~
               nwifeinc+
               educ+
               exper+
               I(exper^2)+
               age+
               kidslt6+
               kidsge6,
               data = mroz)
```

```
# usando stargazer
```

```
library(stargazer)
```

```
stargazer(mroz.mpl,
           type = "text",
           digits = 5)
```

```
=====
                        Dependent variable:
                        -----
                                inlf
                        -----
nwifeinc                    -0.00341**
                             (0.00145)

educ                        0.03800***
                             (0.00738)

exper                       0.03949***
                             (0.00567)
```

|           |                          |
|-----------|--------------------------|
| I(exper2) | -0.00060***<br>(0.00018) |
| age       | -0.01609***<br>(0.00248) |
| kidslt6   | -0.26181***<br>(0.03351) |
| kidsge6   | 0.01301<br>(0.01320)     |
| Constant  | 0.58552***<br>(0.15418)  |

```
-----
Observations      753
R2                0.26422
Adjusted R2       0.25730
Residual Std. Error 0.42713 (df = 745)
F Statistic       38.21795*** (df = 7; 745)
=====
Note:             *p<0.1; **p<0.05; ***p<0.01
```

```
# Punto de inflexión
abs((coefficients(mroz.mpl)[4])/(coefficients(mroz.mpl)[5]*2))
```

```
exper
33.11387
```

```
# Probar la multicolinealidad aproximada
library(car)

mean(vif(mroz.mpl))
```

```
[1] 3.417547
```

```
# Normalidad de los errores

library(tseries)
jarque.bera.test(mroz.mpl$residuals)
```

### Jarque Bera Test

```
data: mroz.mpl$residuals
X-squared = 36.741, df = 2, p-value = 1.051e-08
```

$$H_0 : u \sim N(\mu, \sigma^2)$$

### 3.3.1 El porcentaje predicho correctamente

Es una medida de bondad de ajuste

```
PPC.DTF <- data.frame(mroz$inlf, mroz.mpl$fitted.values)
names(PPC.DTF) <- c("inlf", "VA.inlf")
PPC.DTF$ajuste <- ifelse(mroz.mpl$fitted.values>=0.5,1,0)
PPC.DTF$PPC <- ifelse(PPC.DTF$inlf==PPC.DTF$ajuste,1,0)
prop.table(table(PPC.DTF$PPC))*100
```

| 0        | 1        |
|----------|----------|
| 26.56042 | 73.43958 |

### 3.3.2 Interpretaciones ceteris paribus

- Para interpretar las estimaciones, hay que recordar que una variación en la variable independiente modifica la probabilidad de que  $inlf = 1$ . Por ejemplo, *educ* si las demás variables permanecen constantes, una año más de educación hace que la probabilidad de participación en la fuerza laboral aumente en 3.8%. Si consideramos de forma literal a esta ecuación, entonces 10 años más educación incrementarían la probabilidad de permanecer en la fuerza laboral en 38%.
- El coeficiente de **nwifeinc** significa que si  $\Delta nwifeinc = 10$  (un incremento de \$10,000), la probabilidad de que una mujer permanecer en la fuerza de trabajo disminuye en 3.4%. Como se puede ver, esta disminución es pequeña a pesar de aumentar el salario en 10,000 dólares.
- La experiencia ha sido introducida como una función cuadrática para que el efecto de la experiencia sea decreciente sobre la probabilidad de participar en la fuerza laboral. *Ceteris paribus*, la variación de la probabilidad se aproxima como  $0.039 - 2(0.0006)exper = 0.039 - 0.0012exper$ . El punto en el que la experiencia transcurrida no tiene efecto sobre

la probabilidad de participación en la fuerza laboral es:  $0.039/0.0012 = 32.5$ . Sólo 13 mujeres de las 753 en esta muestra tiene más de 32 años de experiencia.

```
mroz$dico.exper <- ifelse(mroz$exper>32.5,1,0)
table(mroz$dico.exper)
```

```
0    1
740 13
```

- A diferencia de la cantidad de hijos entre 6 y 18 años, la cantidad de hijos menores a 6 años tiene un impacto enorme sobre la probabilidad de participación en la fuerza de trabajo. A tal punto que, tener un hijo menor a seis años adicional, reduce la probabilidad de participación en la fuerza trabajo en 26.18%. En la muestra, menos de 20% de las mujeres tienen al menos un hijo pequeño.

```
mroz$dic.hijo <- ifelse(mroz$kidslt6>=1,1,0)
prop.table(table(mroz$dic.hijo))*100
```

```
      0      1
80.47809 19.52191
```

- Respecto al PPC el modelo predice en 73.44% a la variable **infl**.

### 3.3.3 Límites del MPL

- Las dos desventajas más importantes son que las probabilidades ajustadas pueden ser menores que cero o mayores que uno.

```
summary(mroz.mpl$fitted.values)
```

```
      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
-0.3451  0.4016  0.5880  0.5684  0.7592  1.1272
```

Se demuestra para este ejemplo que algunos valores ajustados son menores que cero y mayores que uno.

- y, el efecto parcial de cualquier variable explicativa (si aparece en la ecuación en su nivel) es constante

### 3.4 Ejemplo 3: Un modelo de probabilidad lineal para arrestos (Wooldridge 2009)

Sea **arr86** una variable binaria igual a uno si un hombre fue arrestado en 1986 e igual a cero si no fue así. La población es un grupo de hombres de California nacidos en 1960 o en 1961, que habían sido detenidos al menos una vez antes de 1986. Un modelo de probabilidad lineal para describir **arr86** es:

$$arr86 = \beta_0 + \beta_1 pcnv + \beta_2 avg\ sen + \beta_3 tot\ time + \beta_4 pt\ ime86 + \beta_5 qemp86 + u$$

donde:

- *pcnv* = proporción de arrestos previos que condujeron a una condena (+)
- *avg sen* = sentencia promedio cumplida en condenas previas (en meses) (-)
- *tot time* = meses en prisión y desde los 18 años de edad anteriores a 1986 (-)
- *pt ime86* = meses en prisión en 1986 (+ -)
- *qemp86* = cantidad de trimestres (0 a 4) que el hombre estuvo empleado legalmente en 1986.(-)

```
data("crime1", package = "wooldridge")
str(crime1)
```

```
'data.frame':  2725 obs. of  16 variables:
 $ narr86 : int  0 2 1 2 1 0 2 5 0 0 ...
 $ nfarr86: int  0 2 1 2 1 0 2 3 0 0 ...
 $ nparr86: int  0 0 0 1 0 0 1 5 0 0 ...
 $ pcnv   : num  0.38 0.44 0.33 0.25 0 ...
 $ avg sen : num  17.6 0 22.8 0 0 ...
 $ tot time: num  35.2 0 22.8 0 0 ...
 $ pt ime86: int  12 0 0 5 0 0 0 0 9 0 ...
 $ qemp86 : num  0 1 0 2 2 4 0 0 0 3 ...
 $ inc86   : num  0 0.8 0 8.8 8.1 ...
 $ durat   : num  0 0 11 0 1 ...
 $ black   : int  0 0 1 0 0 0 1 0 1 0 ...
 $ hispan  : int  0 1 0 1 0 0 0 0 0 1 ...
 $ born60  : int  1 0 1 1 0 1 1 1 1 1 ...
 $ pcnvsq  : num  0.1444 0.1936 0.1089 0.0625 0 ...
 $ pt86sq  : int  144 0 0 25 0 0 0 0 81 0 ...
 $ inc86sq : num  0 0.64 0 77.44 65.61 ...
 - attr(*, "time.stamp")= chr "25 Jun 2011 23:03"
```

```
# Creando la variable y
table(crime1$narr86)
```

```

  0    1    2    3    4    5    6    7    9   10   12
1970 559 121  42  12  13   4   1   1   1   1

```

```
crime1$arr86 <- ifelse(crime1$narr86>0,1,0)
```

```

arr86.MPL <- lm(arr86~
                pcnv+
                avgsen+
                tottime+
                ptime86+
                qemp86,
                data = crime1)
stargazer(arr86.MPL,
          digits = 5,
          type = "text")

```

```

=====
                        Dependent variable:
                        -----
                                arr86
                        -----
pcnv                        -0.16244***
                             (0.02124)

avgsen                      0.00611
                             (0.00645)

tottime                     -0.00226
                             (0.00498)

ptime86                     -0.02197***
                             (0.00463)

qemp86                      -0.04283***
                             (0.00540)

```

```

Constant                                0.44062***
                                         (0.01723)

-----
Observations                            2,725
R2                                       0.04735
Adjusted R2                             0.04560
Residual Std. Error      0.43731 (df = 2719)
F Statistic                27.02966*** (df = 5; 2719)
=====
Note:                                *p<0.1; **p<0.05; ***p<0.01

```

### 3.4.1 Porcentaje predicho correctamente

```

PPC.arr <- data.frame(crime1$arr86, arr86.MPL$fitted.values)
names(PPC.arr)<- c("arr86", "valores_ajustados")
PPC.arr$ajuste <- ifelse(PPC.arr$valores_ajustados>=0.5,1,0)
PPC.arr$PPC <-ifelse(PPC.arr$arr86==PPC.arr$ajuste,1,0)
prop.table(table(PPC.arr$PPC))*100

```

```

      0      1
27.70642 72.29358

```

### 3.4.2 Interpretaciones

- $\hat{\beta}_0 = 0.44062$ , es la probabilidad de ser arrestado que se predice a un hombre, que no ha sido condenado, que no ha estado en prisión despues de los 18 años, que no ha estado en prisión en 1986 y que ha estado desempleado todo el año
- $\hat{\beta}_2; \hat{\beta}_3$  que pertenecen a las variables *avg*sen y *tot*time, respectivamente. No son estadísticamente significativas (no tiene asteriscos). El signo de *avg*sen es contraintuitivo, pues se esperaria que condenas más largas disminuyan la probabilidad de ser arrestado en 1986. Con respecto a *tot*time, según los datos haber tenido meses en prisión de los 18 y antes de 1986, disminuye la probabilidad de ser arrestado en 1986.
- **ptimes86** el aumento de probabilidad de ser condenado en 1986, disminuye la probabilidad de ser arrestado en promedio en 2.2%. Si un hombre esta en prisión no puede ser arrestado. Como **ptimes86** esta medida en mese, 6 meses más en prisión, reduce la probabilidad de ser detenido en  $0.0022 \times 6 \approx 0.132$ . En esta variable se puede observar otra vez, que el MPL no cierto en todos los rangos de variables independientes.

Por ejemplo, si un hombre está en prisión durante 12 meses de 1986, no puede ser detenido en 1986. **Ceteris paribus**, cuando  $ptime86 = 12$  la probabilidad predicha es de  $0.44 - 0.22 \times 12 = 0.177$  que es distinta de cero

- **qemp86** tener un empleo reduce la probabilidad de detención de manera significativa. **Ceteris paribus** un hombre que ha sido empleado durante 4 trimestres, la probabilidad de ser detenido se reduce en  $0.04283 \times 4 \approx 0.172$

### 3.5 Incorporando regresores binarios al MPL

En los modelos de variable dependiente binaria, se puede incluir variables independientes binarias. Este coeficiente mide la diferencia que se predice para la probabilidad en la relación con el grupo base. Así, incluimos regresores binarios en el MPL para **arr86**

```
arr86.MPL.bi <- lm(arr86~
  pcnv+
  avgsen+
  tottime+
  ptime86+
  qemp86+
  black+
  hispan,
  data = crime1)

stargazer(arr86.MPL.bi,
  digits = 5,
  type = "text")
```

```
=====
                        Dependent variable:
                        -----
                        arr86
                        -----
pcnv                    -0.15206***
                        (0.02107)

avgsen                  0.00462
                        (0.00639)

tottime                 -0.00256
```



```

(0.00493)

ptime86          -0.02370***
                  (0.00459)

qemp86           -0.03847***
                  (0.00540)

black            0.16976***
                  (0.02367)

hispan           0.09619***
                  (0.02071)

Constant         0.38043***
                  (0.01873)

-----
Observations      2,725
R2               0.06819
Adjusted R2       0.06579
Residual Std. Error 0.43265 (df = 2717)
F Statistic      28.40542*** (df = 7; 2717)
=====
Note:             *p<0.1; **p<0.05; ***p<0.01

```

```
# Limites del MPL
```

```
summary(arr86.MPL.bi$fitted.values)
```

```

      Min.   1st Qu.   Median     Mean  3rd Qu.    Max.
-0.05598  0.21483   0.26501   0.27706  0.36119   0.61273

```

### 3.5.1 Interpretaciones

- El coeficiente **black** significa que, *ceteris paribus* un hombre negro tiene una probabilidad del 17% mayor de ser detenido frente a un hombre blanco. Otra forma de expresar esto, es que la probabilidad de ser detenido es de 17 puntos porcentuales mayor para los negros que para los blancos.

De la misma manera que la versión del modelo de regresión lineal múltiple en el MPL se puede verificar el cumplimiento de los supuestos.

### 3.5.2 Supuestos

#### 3.5.2.1 Homocedasticidad

- La **homocedasticidad** o varianza constante, su incumplimiento se conoce como **heterocedasticidad** o varianza no constante
- Su incumplimiento tiene efecto sobre la eficiencia de los estimadores de MCO.
- Su incumplimiento, hace que las pruebas  $t$  o  $f$  se invaliden, pues el cálculo de la varianza supone homocedasticidad que no se cumple. Por lo tanto, la matriz de varianza covarianza esta mal calculada.
- Existen dos formas de la heterocedasticidad, conocida y desconocida. Es común la forma desconocida, por tal motivo calculamos **errores estándar heterocedástico robustos**

#### Hipótesis

$$H_0 : \sigma^2$$

$$H_a : \sigma_i^2$$

```
# Test de homcedasticidad
library(lmtest)

# El test de Breusch-Pagan
bptest(mroz.mpl)
```

studentized Breusch-Pagan test

```
data:  mroz.mpl
BP = 24.224, df = 7, p-value = 0.00104
```

```
# Test de Goldfeld-Quandt
gqtest(mroz.mpl)
```

# Goldfeld-Quandt test

```
data: mroz.mpl
GQ = 2.488e+27, df1 = 369, df2 = 368, p-value < 2.2e-16
alternative hypothesis: variance increases from segment 1 to 2
```

```
library(sandwich)
rob_es <- list(sqrt(diag(vcovHC(mroz.mpl, type = "HC1"))))

library(stargazer)

stargazer(mroz.mpl, mroz.mpl,
          se = rob_es,
          digits = 5,
          type = "text",
          column.labels = c("Heterocedástico-Robusto", "Homocedástico"))
```

| =====     |                          |                          |
|-----------|--------------------------|--------------------------|
|           | Dependent variable:      |                          |
|           | -----                    |                          |
|           | inlf                     |                          |
|           | Heterocedástico-Robusto  | Homocedástico            |
|           | (1)                      | (2)                      |
| -----     |                          |                          |
| nwifeinc  | -0.00341**<br>(0.00152)  | -0.00341**<br>(0.00145)  |
| educ      | 0.03800***<br>(0.00727)  | 0.03800***<br>(0.00738)  |
| exper     | 0.03949***<br>(0.00581)  | 0.03949***<br>(0.00567)  |
| I(exper2) | -0.00060***<br>(0.00019) | -0.00060***<br>(0.00018) |
| age       | -0.01609***<br>(0.00240) | -0.01609***<br>(0.00248) |
| kidslt6   | -0.26181***              | -0.26181***              |

|                                |                             |                         |
|--------------------------------|-----------------------------|-------------------------|
|                                | (0.03178)                   | (0.03351)               |
| kidsge6                        | 0.01301<br>(0.01353)        | 0.01301<br>(0.01320)    |
| Constant                       | 0.58552***<br>(0.15226)     | 0.58552***<br>(0.15418) |
| -----                          |                             |                         |
| Observations                   | 753                         | 753                     |
| R2                             | 0.26422                     | 0.26422                 |
| Adjusted R2                    | 0.25730                     | 0.25730                 |
| Residual Std. Error (df = 745) | 0.42713                     | 0.42713                 |
| F Statistic (df = 7; 745)      | 38.21795***                 | 38.21795***             |
| =====                          |                             |                         |
| Note:                          | *p<0.1; **p<0.05; ***p<0.01 |                         |

### 3.5.2.2 Multicolinealidad aproximada

```
library(regclass)
```

```
Cargando paquete requerido: bestglm
```

```
Cargando paquete requerido: leaps
```

```
Cargando paquete requerido: VGAM
```

```
Cargando paquete requerido: stats4
```

```
Cargando paquete requerido: splines
```

```
Adjuntando el paquete: 'VGAM'
```

```
The following object is masked from 'package:AER':
```

```
tobit
```

The following object is masked from 'package:lmtest':

lrtest

The following object is masked from 'package:car':

logit

Cargando paquete requerido: rpart

Cargando paquete requerido: randomForest

randomForest 4.7-1.2

Type rfNews() to see new features/changes/bug fixes.

Important regclass change from 1.3:

All functions that had a . in the name now have an \_  
all.correlations -> all\_correlations, cor.demo -> cor\_demo, etc.

```
VIF(mroz.mpl)
```

| nwifeinc | educ     | exper    | I(exper^2) | age      | kidslt6  | kidsge6  |
|----------|----------|----------|------------|----------|----------|----------|
| 1.170686 | 1.166001 | 8.636160 | 8.770985   | 1.658272 | 1.270358 | 1.250370 |

```
mean(VIF(mroz.mpl))
```

```
[1] 3.417547
```

En promedio el factor de inflación de la varianza es menor que 10. Por lo tanto, no debe preocuparme la multicolinealidad aproximada

### Normalidad de los errores

La  $H_0$ : los errores siguen una distribución normal

```
library(tseries)
jarque.bera.test(mroz.mpl$residuals)
```

Jarque Bera Test

```
data: mroz.mpl$residuals
X-squared = 36.741, df = 2, p-value = 1.051e-08
```

## 3.6 Modelos Logit y Probit para la respuesta binaria

El MPL es un modelo simple, que tiene varias desventajas. Las dos más importantes, como vimos en los ejemplos anteriores, son que las probabilidades ajustadas pueden ser menores que cero o mayores que uno y el efecto parcial de cualquier variable explicativa es constante. Estas limitaciones del MPL se superan con **modelos de respuesta binaria** más sofisticados.

En un modelo de respuesta binaria, el interés principal yace en la **probabilidad de respuesta**

$$P(y = 1|\mathbf{x}) = P(y = 1|x_1, x_2, \dots, x_k)[6]$$

Donde:  $\mathbf{x}$  denota el conjunto total de variable explicativas. Por ejemplo,  $\mathbf{x}$  podría contener varias características individuales como la educación, edad, estado civil, etc., que afecta, por ejemplo, al estado del empleo, incluye una variable de binaria para la participación en reciente programa de empleo

### 3.6.1 Especificación del modelo logit y probit

En el MPL, se suponía que la probabilidad de respuesta es lineal al conjunto de parámetros,  $\beta_j$ . Para evitar las limitaciones del MPL, considere una clase de modelos de respuesta binaria de la forma:

$$P(y = 1|\mathbf{x}) = G(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k) = G(\beta_0 + \mathbf{x})[7]$$

donde  $G(\cdot)$  es una función que asume valores estrictamente entre 0 y 1:  $0 < G(\cdot) < 1$  para todos los número reales  $z$ . Esto asegura que las probabilidades de respuesta estimada sean estrictamente entre cero y uno. Note que:  $\mathbf{x} = \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k$

Se han sugerido varias funciones no lineales para la función  $G(\cdot)$  a fin de asegurar que las probabilidades estén entre cero y uno. Las dos funciones que estudiaremos en esta clase, se usan en la mayoría de aplicaciones (junto con el MPL). En el **Modelo Logit**,  $G(\cdot)$  es la función logística:

$$G(z) = \frac{\exp(z)}{[1 + \exp(z)]} = \frac{e^z}{[1 + e^z]} = \Lambda(z)[8]$$

Que está entre cero y uno para todos los números reales  $z$ . Esta es la función de distribución acumulada (fda) para una variable aleatoria logística estándar.

En el **Modelo Probit**,  $G(\cdot)$  es la función de distribución acumulada normal estándar, que viene dada de la siguiente forma:

$$G(z) = \Phi(z) \equiv \int_{-\infty}^z \phi(v)dv[9]$$

Donde:

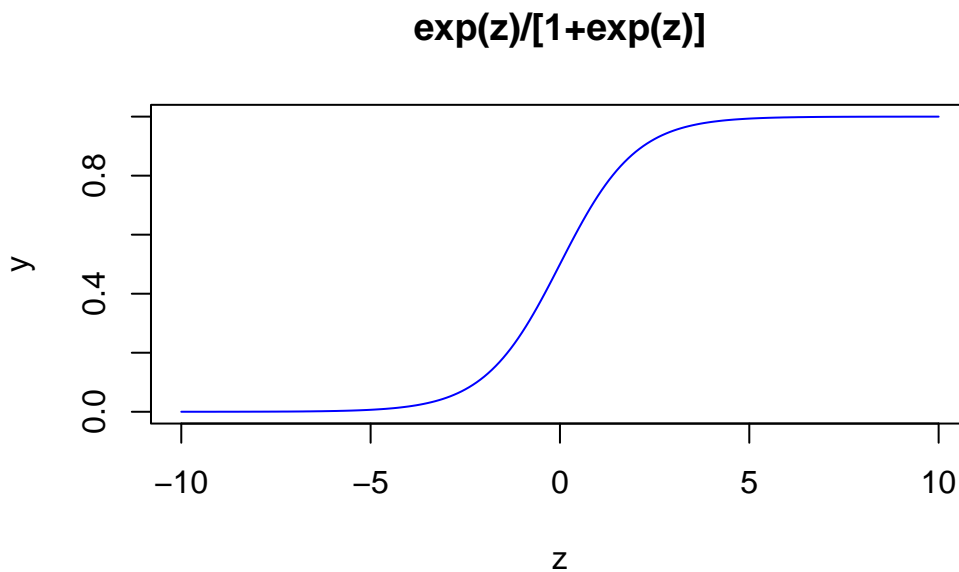
- $\phi(z)$  es la función de densidad normal estándar

$$\phi(z) = (2\pi)^{-1/2} \exp(-z^2/2) = \frac{e^{-z^2/2}}{\sqrt{2\pi}}[10]$$

Esta elección de  $G(\cdot)$  asegura que  $0 < P(y = 1|\mathbf{x}) < 1$ , para todos los valores de los parámetros y las  $x_j$

Las funciones  $G(\cdot)$  de **Logit** y **Probit** son crecientes. Cada una aumenta con más rapidez en  $z = 0$ ,  $G(z) \rightarrow 0$  a medida que  $z \rightarrow -\infty$  y,  $G(z) \rightarrow 1$  a medida que  $z \rightarrow \infty$

```
z<-seq(-10,10,0.1)
y<-exp(z)/(1+exp(z))
plot(y~z,
     main = "exp(z)/[1+exp(z)]",
     type = "l", col="blue")
```



Los modelos Logit y Probit pueden derivarse a partir de un **modelo de variable latente** subyacente.

Sea  $y^*$  una variable inobservable, o *latente* determinada por:

$$y^* = \beta_0 + \mathbf{x} + e, y = 1[y^* > 0] \quad [11]$$

Aquí se introduce la notación  $1[\cdot]$  para definir un resultado binario. La función  $1[\cdot]$  es la **función indicador**, que asume valor de uno si el evento dentro de los corchetes es verdadero y cero si es falso. Entonces tenemos:

$$\begin{aligned} y &= 1[y^* > 0] \quad [12] \\ y &= 0[y^* \leq 0] \end{aligned}$$

Se supone que  $e$  es independiente de  $\mathbf{x}$  y que  $e$  tiene una distribución logística estándar o normal estándar. En cualquier caso,  $e$  se distribuye simétricamente en torno a cero, lo que significa que  $1 - G(-Z) = G(z)$  para todos los números reales de  $z$ .

Los economistas tienden a favorecer el supuesto de normalidad para  $e$ , lo cual es la razón por la que en Econometría el **modelo Probit** es más popular que el **logit**. Además, varios problemas de especificación, que se tratarán después, se analizan fácilmente mediante Probit debido a las propiedades de la distribución normal.

Dado estos supuestos podemos calcular la probabilidad de respuesta para  $y$ :

$$P(y = 1|\mathbf{x}) = P(y^* > 0|\mathbf{x}) = P(e > -(\beta_0 + \mathbf{x})|\mathbf{x}) = 1 - G[-(\beta_0 + \mathbf{x})] = G(\beta_0 + \mathbf{x}) \quad [13]$$

uno de los objetivos de los modelos de respuesta binaria, es explicar los efectos de las  $x_j$  sobre la probabilidad de respuesta  $P(y = 1|\mathbf{x})$ . Cuidado, la fórmula de la variable latente tiende a dar la impresión de que lo que principalmente interesa son los efectos de cada  $x_j$  sobre  $y^*$ . Hay que aclarar que en los modelos Logit y Probit la dirección de efectos de  $x_j$  sobre  $E(y|\mathbf{x}) = P(y = 1|\mathbf{x}) = G(\beta_0 + \mathbf{x})$

Aclarando que:

$$E(y^*|\mathbf{x}) = \beta_0 + \mathbf{x} \quad [14]$$

Como la variable latente pocas veces tiene una unidad de medición definida, las magnitudes de cada  $\beta_j$  no son, útiles por sí mismas, a diferencia de las magnitudes calculadas por el **MPL**. Entonces para la mayoría de los propósitos, se requiere estimar el efecto de  $x_j$  sobre la probabilidad de éxito  $P(y = 1|\mathbf{x})$ , esto se complica por la naturaleza no lineal de  $G(\cdot)$ . Esto nos lleva a definir tres casos de efectos parciales:



### 3.6.2 Variables aproximadamente continuas:

Para hallar el efecto parcial de las variables aproximadamente continuas sobre la probabilidad de respuesta, se recurre al cálculo. Si  $x_j$  es una variable aproximadamente continua, su efecto parcial sobre  $p(x) = P(y = 1|\mathbf{x})$  se obtiene de la siguiente derivada parcial:

$$\frac{\partial p(\mathbf{x})}{\partial x_j} = g(\beta_0 + \mathbf{x})\beta_j[15]$$

Donde:

$$g(z) \equiv \frac{dG}{dz}(z)[16]$$

Debido a que  $G$  es la fda de una variable aleatoria continua,  $g$  es la función de densidad de probabilidad.

En los casos de logit y probit,  $G(\cdot)$  es una fda estrictamente creciente y, por lo tanto,  $g(z) > 0 \forall z$ . Por lo tanto, el efecto parcial de  $x_j$  sobre  $p(\mathbf{x})$  depende de  $\mathbf{x}$  a través de la cantidad positiva  $g(\beta_0 + \mathbf{x})$ , lo que significa que el efecto parcial siempre tiene el mismo signo que  $\beta_j$ .

La ecuación de la derivada parcial muestra que los efectos *relativos* del cualquiera las variables explicativas continuas no depende de  $\mathbf{x}$ , la razón de los efectos parciales de  $x_j$  y  $x_h$  es  $\frac{\beta_j}{\beta_h}$ . El caso típico de que  $g$  sea una densidad simétrica en torno a cero, con una única moda en cero, el mayor efecto ocurre cuando  $\beta_0 + \mathbf{x} = 0$ . Por ejemplo:

#### 3.6.2.1 En el caso de Probit

$$g(z) = \phi(z) = \frac{e^{-z^2/2}}{\sqrt{2\pi}}$$
$$g(0) = \frac{e^{-0/2}}{\sqrt{2\pi}} = \frac{1}{\sqrt{2\pi}} \approx 0.40$$

```
1/sqrt(2*pi)
```

[1] 0.3989423

### 3.6.2.2 En el caso logit

$$g(z) = \frac{e^z}{[1 + e^z]^2}$$

Evaluable cuando  $z = 0$

$$g(0) = \frac{e^0}{[1 + e^0]^2}$$

$$g(0) = \frac{1}{[1 + 1]^2} = \frac{1}{4} = 0.25$$

### 3.6.3 Cuando la variable explicativa es binaria

Entonces el efecto parcial de cambiar  $x_1$  de cero a uno, manteniendo constante todas las demás variables, es así:

$$G(\beta_0 + \beta_1 + \beta_2 x_2 + \dots + \beta_k x_k) - G(\beta_0 + \beta_2 x_2 + \dots + \beta_k x_k) [17]$$

De nuevo, esto depende de todos los valores de las otras  $x_j$ . Por ejemplo, si  $y$  es un indicador de empleo y  $x_1$  es una variable binaria que indica la participación en un programa de capacitación laboral, entonces es el cambio en la probabilidad de empleo debido a este programa de capacitación; esto depende de las demás características que afectan la posibilidad de obtener el empleo, como la educación y la experiencia. Observe que saber el signo del  $\beta_1$  es suficiente para determinar si el programa tuvo un efecto positivo o negativo. Pero para hallar la **magnitud** del efecto, se tiene que estimar la cantidad usando la anterior ecuación [17].

### 3.6.4 Cuando la variable explicativa es discreta

Por ejemplo, el número de hijos. Si  $x_k$  denota esta variable, el efecto sobre la probabilidad de que  $x_k$  cambien de  $c_k$  a  $c_k + 1$  es simplemente:

$$G[\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k (c_k + 1)] - G[\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k c_k]$$

### 3.6.5 Estimación de máxima verosimilitud de los modelos Logit y Probit

Para los MPL se uso mínimos cuadrados ordinarios (MCO) o, si existe heterocedasticidad, mínimos cuadrados ponderados (MCP). Ahora bien, debido a naturaleza no lineal  $E(y|\mathbf{x})$ , MCO y MCP no son aplicables, por esta razón se usa la **estimación de máxima verosimilitud (EMV)**. Para estimar los modelos de variables dependientes limitadas, los métodos de máxima verosimilitud son indispensables. Como la EMV está basada en la distribución de  $y$  dada  $\mathbf{x}$ , la heterocedasticidad en  $Var(y|\mathbf{x})$  automáticamente se toma en cuenta.

Suponiendo que se tiene una muestra aleatoria  $n$ . Para obtener el estimador de máxima verosimilitud, condicional sobre las variables explicativas, es necesario la densidad de  $y_i$  dada  $\mathbf{x}_i$ . Esto se escribe como:

$$f(y|\mathbf{x}_i) = [G(\mathbf{x}_i)]^y [1 - G(\mathbf{x}_i)]^{1-y}, y = 0, 1 [17]$$

Para simplificar, se absorbe el intercepto en el vector  $\mathbf{x}_i$ . La **función log-verosimilitud** para cada observación  $i$  es una función de los parámetros y los datos  $(\mathbf{x}_i; y_i)$ , aplicando el logaritmo a la anterior ecuación tenemos:

$$l_i(\beta) = y_i \log[G(\mathbf{x}_i)] + (1 - y_i) \log[1 - G(\mathbf{x}_i)] [18]$$

Como  $G(\cdot)$  está estrictamente definida entre cero y uno para logit y probit,  $l_i(\beta)$  está bien definida para todos los valores  $\beta$

La log-verosimilitud para un tamaño de muestra  $n$  se obtiene al sumar todas las observación de la ecuación anterior:

$$\mathcal{L}_i(\beta) = \sum_{i=1}^n l_i(\beta) [19]$$

La EMV de  $\beta$ , denotada como  $\hat{\beta}$ , maximiza esta log-verosimilitud. Si  $G(\cdot)$  es la fda logit estándar, entonces  $\hat{\beta}$  será el estimador Logit; si  $G(\cdot)$  es la fda normal estándar, entonces  $\hat{\beta}$  será el estimador Probit.

### 3.6.6 Ejemplos de aplicación

Continuaremos con los ejemplos usados en el MPL, como son: la Participación en la fuerza laboral de las mujeres casadas, un modelo de probabilidad para arrestos y, sumaremos el ejemplo de la denegación de una hipoteca (Stock and Watson 2012)

### 3.6.6.1 Logit para los datos HMDA

```
library(AER)
data(HMDA)
```

```
HMDA |>
  str()
```

```
'data.frame':  2380 obs. of  14 variables:
 $ deny      : Factor w/ 2 levels "no","yes": 1 1 1 1 1 1 1 1 2 1 ...
 $ pirat     : num  0.221 0.265 0.372 0.32 0.36 ...
 $ hirat     : num  0.221 0.265 0.248 0.25 0.35 ...
 $ lvrat     : num  0.8 0.922 0.92 0.86 0.6 ...
 $ chist     : Factor w/ 6 levels "1","2","3","4",...: 5 2 1 1 1 1 1 2 2 2 ...
 $ mhist     : Factor w/ 4 levels "1","2","3","4": 2 2 2 2 1 1 2 2 2 1 ...
 $ phist     : Factor w/ 2 levels "no","yes": 1 1 1 1 1 1 1 1 1 1 ...
 $ unemp     : num  3.9 3.2 3.2 4.3 3.2 ...
 $ selfemp   : Factor w/ 2 levels "no","yes": 1 1 1 1 1 1 1 1 1 1 ...
 $ insurance: Factor w/ 2 levels "no","yes": 1 1 1 1 1 1 1 1 2 1 ...
 $ condomin : Factor w/ 2 levels "no","yes": 1 1 1 1 1 1 2 1 1 1 ...
 $ afam      : Factor w/ 2 levels "no","yes": 1 1 1 1 1 1 1 1 1 1 ...
 $ single    : Factor w/ 2 levels "no","yes": 1 2 1 1 1 1 2 1 1 2 ...
 $ hschool   : Factor w/ 2 levels "no","yes": 2 2 2 2 2 2 2 2 2 2 ...
```

### 3.6.6.2 La participación den la fuerza laboral de las mujeres casadas

#### 3.6.6.2.1 Modelo Probit estimado con fda normal estándar

Para estimar modelos de variable dependiente limitada se usa el comando *glm()*

```
data("mroz", package = "wooldridge")

MPL.mroz <-lm(inlf~
              nwifeinc+
              educ+
              exper+
              expersq+
              age+
              kidslt6+
              kidsge6,
              data = mroz)
```

```

mroz.probit <- glm(inlf~
                  nwifeinc+
                  educ+
                  exper+
                  expersq+
                  age+
                  kidslt6+
                  kidsge6,
                  data = mroz,
                  family = binomial(link = "probit"))

library(stargazer)
stargazer(MPL.mroz, mroz.probit, type = "text")

```

| =====    |                       |                      |
|----------|-----------------------|----------------------|
|          | Dependent variable:   |                      |
|          | -----                 |                      |
|          | inlf                  |                      |
|          | OLS                   | probit               |
|          | (1)                   | (2)                  |
| -----    |                       |                      |
| nwifeinc | -0.003**<br>(0.001)   | -0.012**<br>(0.005)  |
| educ     | 0.038***<br>(0.007)   | 0.131***<br>(0.025)  |
| exper    | 0.039***<br>(0.006)   | 0.123***<br>(0.019)  |
| expersq  | -0.001***<br>(0.0002) | -0.002***<br>(0.001) |
| age      | -0.016***<br>(0.002)  | -0.053***<br>(0.008) |
| kidslt6  | -0.262***<br>(0.034)  | -0.868***<br>(0.118) |

|                     |                             |                  |
|---------------------|-----------------------------|------------------|
| kidsge6             | 0.013<br>(0.013)            | 0.036<br>(0.044) |
| Constant            | 0.586***<br>(0.154)         | 0.270<br>(0.508) |
| -----               |                             |                  |
| Observations        | 753                         | 753              |
| R2                  | 0.264                       |                  |
| Adjusted R2         | 0.257                       |                  |
| Log Likelihood      |                             | -401.302         |
| Akaike Inf. Crit.   |                             | 818.604          |
| Residual Std. Error | 0.427 (df = 745)            |                  |
| F Statistic         | 38.218*** (df = 7; 745)     |                  |
| =====               |                             |                  |
| Note:               | *p<0.1; **p<0.05; ***p<0.01 |                  |

#### 3.6.6.2.1.1 ¿Cómo funciona la mecánica del modelo Probit?

```
mroz.probit.simple <-glm(inlf~
                        kidslt6,
                        data = mroz,
                        family = binomial(link = "probit"))

mroz.probit.simple1 <-glm(inlf~
                        nwifeinc,
                        data = mroz,
                        family = binomial(link = "probit"))

stargazer::stargazer(mroz.probit.simple1, type = "text")
```

```
=====
                        Dependent variable:
                        -----
                        inlf
                        -----
nwifeinc                -0.013***
                        (0.004)

Constant                0.432***
```

(0.094)

```
-----  
Observations          753  
Log Likelihood        -509.662  
Akaike Inf. Crit.     1,023.324  
=====
```

Note:                \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

```
mean(mroz$kidslt6)
```

```
[1] 0.2377158
```

```
# EFectos en cambios puntuales  
  
prediccion<-predict(mroz.probit.simple,  
                    newdata=data.frame("kidslt6"=c(1,2)),  
                    type = "response")  
  
diff(prediccion)*100
```

```
          2  
-18.7173
```

### 3.6.6.3 Presentación del modelo estimado

#### Modelo probit simple

$$P(\widehat{infl = 1} | kidslt6) = \Phi(0.299 - 0.539kidslt6)$$

```
pnorm(coef(mroz.probit.simple)[1]+coef(mroz.probit.simple)[2]*2)-pnorm(coef(mroz.probit.simp
```

```
(Intercept)  
-0.187173
```

#### Ecuación estimada de probit

```
coef(mroz.probit)
```

| (Intercept)  | nwifeinc     | educ        | exper       | expersq      | age          |
|--------------|--------------|-------------|-------------|--------------|--------------|
| 0.270073573  | -0.012023637 | 0.130903969 | 0.123347168 | -0.001887067 | -0.052852442 |
| kidslt6      | kidsge6      |             |             |              |              |
| -0.868324680 | 0.036005611  |             |             |              |              |

$$P(inlf = 1 | nwifeinc, \dots, kidsge6) = \Phi(0.27 - 0.012nwifeinc + 0.131educ + 0.12exper - 0.0019exper^2 - 0.053age - 0.87kidslt6 + 0.036kidsge6)$$

¿Cuál es la probabilidad de salir de que María salga a trabajar, dado que tiene su esposo un ingreso mensual 300USD, tiene 4 años de educación, nunca ha trabajado, tiene 29 años y un niño de 3 años?

```
coef(mroz.probit)
```

| (Intercept)  | nwifeinc     | educ        | exper       | expersq      | age          |
|--------------|--------------|-------------|-------------|--------------|--------------|
| 0.270073573  | -0.012023637 | 0.130903969 | 0.123347168 | -0.001887067 | -0.052852442 |
| kidslt6      | kidsge6      |             |             |              |              |
| -0.868324680 | 0.036005611  |             |             |              |              |

```
# Pregunta inicial
prediccion<-predict(mroz.probit,
                    newdata=data.frame("nwifeinc"=(300*12)/1000,
                                         "educ"=4,
                                         "exper"=0,
                                         "expersq"=0,
                                         "age"=29,
                                         "kidslt6"=1,
                                         "kidsge6"=0),
                    type = "response")

predict(mroz.probit,
        newdata=data.frame("nwifeinc"=(300*12)/1000,
                             "educ"=4,
                             "exper"=0,
                             "expersq"=0,
                             "age"=29+3,
```



```

                                "kidslt6"=1,
                                "kidsge6"=1),
                                type = "response")

```

1  
0.03809838

```

#Diferencia
cambio <- predict(mroz.probit,
                  newdata=data.frame("nwifeinc"=(300*12)/1000,
                                      "educ"=4,
                                      "exper"=0,
                                      "expersq"=0,
                                      "age"=c(29,29+3),
                                      "kidslt6"=1,
                                      "kidsge6"=c(0,1)),
                  type = "response")

diff(cambio)*100

```

2  
-1.130756

```

# En el MPL

cambio.MPL <- predict(MPL.mroz,
                     newdata=data.frame("nwifeinc"=(300*12)/1000,
                                         "educ"=4,
                                         "exper"=0,
                                         "expersq"=0,
                                         "age"=c(29,29+3),
                                         "kidslt6"=1,
                                         "kidsge6"=c(0,1)),
                     type = "response")

diff(cambio.MPL)*100

```

2  
-3.526018

#### 3.6.6.4 Modelo Logit estimado con FDA logística estándar

```
mroz.logit <- glm(inlf~
  nwifeinc+
  educ+
  exper+
  expersq+
  age+
  kidslt6+
  kidsge6,
  data = mroz,
  family = binomial(link = "logit"))

stargazer(mroz.logit, type = "text")
```

```
=====
                        Dependent variable:
                        -----
                                inlf
                        -----
nwifeinc                -0.021**
                        (0.008)

educ                    0.221***
                        (0.043)

exper                   0.206***
                        (0.032)

expersq                 -0.003***
                        (0.001)

age                     -0.088***
                        (0.015)

kidslt6                 -1.443***
                        (0.204)

kidsge6                  0.060
                        (0.075)
```

|          |                  |
|----------|------------------|
| Constant | 0.425<br>(0.860) |
|----------|------------------|

```
-----
Observations          753
Log Likelihood        -401.765
Akaike Inf. Crit.     819.530
=====
```

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

#### 3.6.6.4.0.1 ¿Cómo funciona la mecánica del modelo Logit?

```
mroz.logit.simple <-glm(inlf~
                        kidslt6,
                        data = mroz,
                        family = binomial(link = "logit"))

stargazer(mroz.probit.simple, type = "text")
```

```
=====
                        Dependent variable:
                        -----
                        inlf
                        -----
kidslt6                -0.539***
                        (0.094)

Constant               0.299***
                        (0.051)

-----
Observations          753
Log Likelihood        -497.367
Akaike Inf. Crit.     998.734
=====
Note: *p<0.1; **p<0.05; ***p<0.01
```

```
# Efectos en cambios puntuales
```

```
prediccion<-predict(mroz.logit.simple,
                    newdata=data.frame("kidslt6"=c(1,2)),
                    type = "response")
diff(prediccion)*100
```

```
      2
-18.29326
```

```
lambda <- function(z) 1/(1+exp(-z))
```

```
lambda(coef(mroz.logit.simple)[1]+coef(mroz.logit.simple)[2]*2)*100-lambda(coef(mroz.logit.s
```

```
(Intercept)
-18.29326
```

```
# Verificando que las probabilidades ajustadas se encuentren entre 0 y 1
```

```
summary(mroz.probit$fitted.values)
```

```
      Min.   1st Qu.   Median     Mean  3rd Qu.     Max.
0.002475 0.370959 0.609546 0.570109 0.794345 0.979904
```

```
summary(mroz.logit$fitted.values)
```

```
      Min.   1st Qu.   Median     Mean  3rd Qu.     Max.
0.008672 0.366410 0.610925 0.568393 0.796721 0.968541
```

## Presentación del modelo estimado

$$P(inlf = 1|nwifeinc, ..., kidsge6) = \Lambda(0.425 - 0.021nwifeinc + \dots + 0.060kidsge6)$$

### 3.6.6.5 Comparación de los modelos MPL, Logit y Probit

Para esta comparación se va usar los errores heterocedástico robustos.

```

library(sandwich)

eher<-list(sqrt(diag(vcovHC(MPL.mroz, type = "HC1"))),
           sqrt(diag(vcovHC(mroz.logit, type = "HC1"))),
           sqrt(diag(vcovHC(mroz.probit, type = "HC1"))))

stargazer(MPL.mroz, mroz.logit, mroz.probit,
           se = eher,
           digits = 3,
           type = "text",
           title = "Tabla 2: Estimaciones MPL, logit y probit de la participación en la fuerza",
           df=F,
           header = F)

```

Tabla 2: Estimaciones MPL, logit y probit de la participación en la fuerza laboral

| Dependent variable: |                       |                      |                      |
|---------------------|-----------------------|----------------------|----------------------|
|                     | inlf                  |                      |                      |
|                     | OLS                   | logistic             | probit               |
|                     | (1)                   | (2)                  | (3)                  |
| nwifeinc            | -0.003**<br>(0.002)   | -0.021**<br>(0.009)  | -0.012**<br>(0.006)  |
| educ                | 0.038***<br>(0.007)   | 0.221***<br>(0.045)  | 0.131***<br>(0.026)  |
| exper               | 0.039***<br>(0.006)   | 0.206***<br>(0.032)  | 0.123***<br>(0.019)  |
| expersq             | -0.001***<br>(0.0002) | -0.003***<br>(0.001) | -0.002***<br>(0.001) |
| age                 | -0.016***<br>(0.002)  | -0.088***<br>(0.015) | -0.053***<br>(0.008) |
| kidslt6             | -0.262***<br>(0.032)  | -1.443***<br>(0.204) | -0.868***<br>(0.117) |
| kidsge6             | 0.013                 | 0.060                | 0.036                |

|                     |                             |                  |                  |
|---------------------|-----------------------------|------------------|------------------|
|                     | (0.014)                     | (0.080)          | (0.047)          |
| Constant            | 0.586***<br>(0.152)         | 0.425<br>(0.864) | 0.270<br>(0.507) |
| -----               |                             |                  |                  |
| Observations        | 753                         | 753              | 753              |
| R2                  | 0.264                       |                  |                  |
| Adjusted R2         | 0.257                       |                  |                  |
| Log Likelihood      |                             | -401.765         | -401.302         |
| Akaike Inf. Crit.   |                             | 819.530          | 818.604          |
| Residual Std. Error | 0.427                       |                  |                  |
| F Statistic         | 38.218***                   |                  |                  |
| =====               |                             |                  |                  |
| Note:               | *p<0.1; **p<0.05; ***p<0.01 |                  |                  |

Como podemos ver en la tabla 2 los signos y la significancia es la misma para todas las variables en los tres modelos. Por ejemplo, la variable *educ* y *exper* son estadísticamente significativas en los tres modelos y ambas tienen un signo positivo respecto a la probabilidad de la participación en la fuerza laboral de las mujeres. En un primer momento no es posible comparar las estimaciones logit y probit con las del MPL. Para hacerlas comparables se debe usar el **efecto parcial promedio (EPP)**. Wooldridge (2010, 585) sugiere factores escalares que se deben pre-multiplicar por los coeficientes de logit y probit para hacerlos comparables con el MPL. Para Probit es 0.301 y para logit es 0.179.

#### Usando factores escalares logit y probit para comparar con coeficientes MPL

El ejemplo de la variable *educ*. Si multiplico el coeficiente de *educ* en logit por su factor se obtiene:  $0.179(0.221) \approx 0.040$  y coeficiente probit *educ* es de alrededor de  $0.301(0.131) \approx 0.039$ . Como se puede observar, ambos coeficientes son muy cercanos a la estimación de MPL que es de 0.038. También la variable discreta *kidslt6*, los coeficientes escalados logit y probit son similares al coeficiente del MPL de  $-0.262$ . Estos son  $0.179(-1.443) \approx -0.258$  (logit) y,  $0.301(-0.868) \approx -0.261$  (probit)

La mayor diferencia entre el modelo MPL y los modelos logit y probit es que el MPL supone efectos *constantes* para *educ*, *exper*, *kidslt6*, etc., mientras que los modelos logit y probit implican magnitudes decrecientes de los efectos parciales

#### 3.6.6.6 Curva decreciente

En esta sección vamos a observar como los modelos no lineales logit y probit muestran que no es lo mismo tener niño pequeño, dos o tres, etc, para reducir la probabilidad de salir a trabajar

```

mpl.simple <- lm(inlf~
                kidslt6,
                mroz)
plot(x = mroz$kidslt6,
     y= mroz$inlf,
     main = "Modelo probit para los determinates del trabajo femenino",
     xlab = "Niños menore a seis años",
     ylab = "Infl, si una mujer casada sale a trabajar por un salario",
     pch=20,
     ylim = c(-0.4, 1.4),
     xlim = c(-0.2,8))
grid()
# Añadir las lineas horizontales y el texto
abline(h=1, lty=2, col="darkred")
abline(h=0, lty=2, col="darkred")
text(2.5, 0.9, cex = 0.8, "Sale a trabajar")
text(2.5, -0.1, cex = 0.8, "No sale a trabajar")

# añadiendo la linea de regresión probit
x <- seq(0,7,1)
y <- predict(mroz.probit.simple,
             list(kidslt6=x),
             type = "response")
lines(x,y,lwd=1.5, col="steelblue")

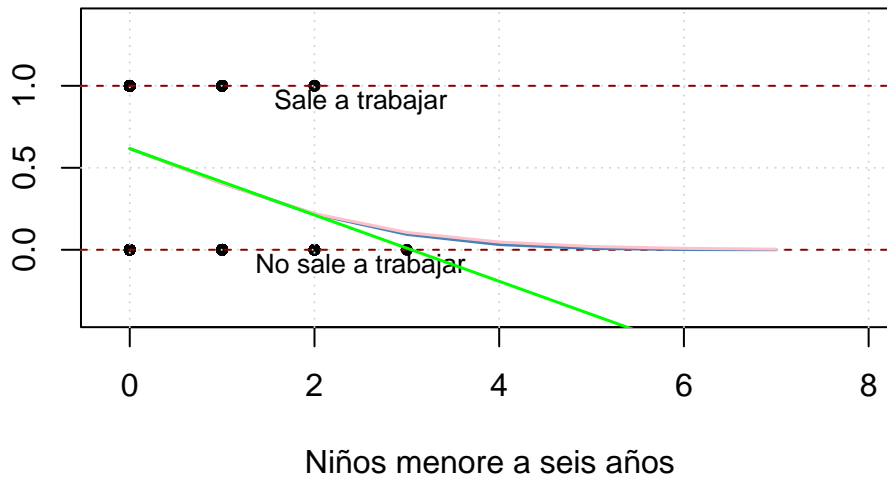
# añadiendo la linea de regresión logit
t <- predict(mroz.logit.simple,
             list(kidslt6=x),
             type = "response")
lines(x,t,lwd=1.5, col="pink")

# añadiendo la linea de regresión MPL
m <- predict(mpl.simple,
             list(kidslt6=x),
             type = "response")
lines(x,m,lwd=1.5, col="green")

```

fl, si una mujer casada sale a trabajar por un sa

### Modelo probit para los determinates del trabajo femenino



### 3.6.7 Interpretaciones de las estimaciones Logit y Probit

Las estimaciones de coeficientes, sus errores estándar y el valor de la función de log-verosimilitud se pueden obtener mediante todos los paquetes de software (R) que realicen logit y probit, y se deben reportar en cualquier aplicación. Los coeficientes dan los signos de los efectos parciales de cada  $x_j$  sobre la probabilidad de respuesta y la significancia estadística de  $x_j$  está determinada por si se puede rechazar  $H_0 : \beta_j = 0$  a un nivel de significancia ( $\alpha$ ).

Como vimos anteriormente para el MPL se puede calcular el **porcentaje predicho correctamente**

Existen varias medidas de bondad de ajuste como **pseudo R-cuadradas**. MacFadden (1974) sugiere la medida  $1 - \frac{\mathcal{L}_{nr}}{\mathcal{L}_o}$ , donde  $\mathcal{L}_{nr}$  es la función de log-verosimilitud para el modelo estimado y  $\mathcal{L}_o$  es la función de probabilidad de log en el modelo con sólo un intercepto. ¿Por qué esta medida es lógica? Recordar que las log-verosimilitud son negativas y, por tanto  $\frac{\mathcal{L}_{nr}}{\mathcal{L}_o} = \frac{|\mathcal{L}_{nr}|}{|\mathcal{L}_o|}$ . Además,  $|\mathcal{L}_{nr}| \leq |\mathcal{L}_o|$ . Si las covarianzas no tiene poder explicativo, entonces  $\frac{\mathcal{L}_{nr}}{\mathcal{L}_o} = 1$ , la **pseudo R-cuadrada** será igual a cero, como la R-cuadrada usual es cero en una regresión lineal cuando las covariadas no tienen poder explicativo.

Por lo general,  $|\mathcal{L}_{nr}| < |\mathcal{L}_o|$ , en cuyo caso  $1 - \frac{\mathcal{L}_{nr}}{\mathcal{L}_o} > 0$ . Supongamos que  $\mathcal{L}_{nr} \rightarrow 0$ , la pseudo-Rcuadrada tiene a uno. Pero en los modelos logit y probit no pueden llegar a cero  $\mathcal{L}_{nr}$  ya que eso requeriría que las probabilidades estimadas cuando  $y_i = 1$  fueran iguales a la unidad y que las probabilidades estimadas cuando  $y_i = 0$  fueran todas iguales a cero



### 3.6.8 Cálculo de la pseudo- $R^2$ de MacFadden

Segun Stock y Watson (2011), las llamadas pseudo- $R^2$  se usan para medir la calidad del ajuste, estas medidas comparan el valor de la probabilidad máxima log-verosimilitud con todos los regresores, con la probabilidad de un modelo sin regresores (modelo nulo) **regresión en una constante**

Por ejemplo, considere una regresión Probit. El **pseudo- $R^2$**  esta dado por:

$$pseudo - R^2 = 1 - \frac{\ln(f_{full}^{max})}{\ln(f_{null}^{max})} [20]$$

Donde:  $f_j^{max} \in [0, 1]$  denota la probabilidad máxima para el modelo  $j$

El razonamiento detrás de esto, es que, la probabilidad maximizada aumenta a medida que se agregan regresores adicionales al modelo, de manera similar a la disminución en  $SRC$  cuando se agregan regresores en un modelo de regresión lineal. Si el modelo completo tiene una probabilidad maximizada similar a la del modelo nulo, el modelo completo no mejora realmente sobre un modelo que usa solo la información en la variable dependiente, por lo que  $pseudo - R^2 \approx 0$ . Si el modelo completo se ajusta muy bien a los datos, la probabilidad maximizada debe estar cerca de 1, tal que  $\ln(f_{full}^{max}) \approx 0$  y  $pseudo - R^2 \approx 1$

En Rstudio para los modelos estimados con  $glm()$  podemos utilizar las entradas de desviación residual (**desviance**) y la desviación nula (**null.desviance**). Estos han sido calculados de la siguiente forma:

$$desviance = -2 \times [\ln(f_{saturated}^{max}) - \ln(f_{full}^{max})] \text{ null.desviance} = -2 \times [\ln(f_{saturated}^{max}) - \ln(f_{null}^{max})]$$

Donde:  $f_{saturated}^{max}$  es la probabilidad maximizada para un modelo que asume que cada observación tiene su propio parámetro (hay  $n + 1$  parámetros a estimar que conducen a un ajuste perfecto). Para los modelos con una variable dependiente binaria, se tiene que:

$$pseduo - R^2 = 1 - \frac{desviance}{null.desviance} = 1 - \frac{\ln(f_{full}^{max})}{\ln(f_{null}^{max})} [21]$$

**Cálculo del  $pseudo - R^2$  para los modelos Logit y Probit** del ejemplo, La participación en la fuerza laboral de las mujeres casadas

```
# Probit

pseudo.R2.P <- 1-(mroz.probit$deviance/mroz.probit$null.deviance)

pseudo.R2.P*100
```

## # Logit

Si usamos la interpretación usual del  $R^2$  de la regresión lineal, diremos que según los **pseudo-R<sup>2</sup>** de logit y probit, aproximadamente la variación de la probabilidad de la participación en la fuerza laboral de las mujeres casadas esta explicada por las variables regresoras en aproximadamente un 22%.

En cualquier caso, la bondad de ajuste suele ser menos importante que intentar obtener estimaciones convincentes de los efectos **ceteris paribus** de las variables explicativas.

### 3.6.9 Efecto parcial promedio y el efecto parcial en el promedio

Parte importante de estos modelos es estimar los efectos de las  $x_j$  sobre las probabilidades de respuesta,  $P(y = 1|\mathbf{x})$ . Si  $x_j$  es aproximadamente continua teníamos:

$$\Delta \hat{P}(y = 1|\mathbf{x}) \approx [g(\hat{\beta}_0 + \mathbf{x}\hat{\beta})\hat{\beta}_j]\Delta x_j[22]$$

Entonces, para pequeños cambios en  $x_j$ . Así que, para  $\Delta x_j = 1$  el cambio en la probabilidad de éxito es aproximadamente  $g(\hat{\beta}_0 + \mathbf{x}\hat{\beta})\hat{\beta}_j$ . En comparación con el MPL, el costo de usar modelos probit y logit es que los efectos parciales en la ecuación anterior son más difíciles de resumir debido a que el factor de escala  $g(\hat{\beta}_0 + \mathbf{x}\hat{\beta})$ , depende de  $\mathbf{x}$ . Una posibilidad es insertar valores interesante para las  $x_j$  (medias, medianas, mínimos, máximos, cuartiles, etc.) y, ver como cambia  $g(\hat{\beta}_0 + \mathbf{x}\hat{\beta})$ . Pero, a pesar de ser un proceso atractivo es tedioso y puede dar como resultado demasiada información aun si el número de variables explicativas es moderado.

Como resumen rápido para obtener magnitudes de efectos parciales, es útil tener un factor escalar único que se pueda multiplicar con cada  $\hat{\beta}_j$  (o al menos aquellos coeficiente de variables aproximadamente continuas). Un método que suele usarse en paquetes econométricos es reemplazar cada variable explicativas con su promedio muestral. En otras palabras, el factor de ajuste es:

$$g(\hat{\beta}_0 + \bar{\mathbf{x}}\hat{\beta}) = g(\hat{\beta}_0 + \hat{\beta}_1\bar{x}_1 + \hat{\beta}_2\bar{x}_2 + \dots + \hat{\beta}_k\bar{x}_k)[23]$$

Donde:  $g(\cdot)$  es la densidad normal estándar ( $\phi$ ) para el caso probit y,  $g(z) = \frac{\exp(z)}{[1+\exp(z)]^2}$  para logit. Cuando a la ecuación anterior se multiplica por  $\hat{\beta}_j$  obtenemos el efecto de  $x_j$  para la persona promedio en la muestra. Por lo tanto, si multiplico el coeficiente  $\beta_j$  por la ecuación [23], se obtiene el **efecto parcial en el promedio (EPeP)**.

### 3.6.9.1 Ejemplo con los determinantes del trabajo femenino

```
data("mroz", package = "wooldridge")

Epep.probit <- glm(inlf~nwifeinc,
                  mroz,
                  family = binomial(link = "probit"))
stargazer::stargazer(Epep.probit, type = "text")
```

```
=====
                        Dependent variable:
-----
                        inlf
-----
nwifeinc                -0.013***
                        (0.004)

Constant                0.432***
                        (0.094)

-----
Observations              753
Log Likelihood            -509.662
Akaike Inf. Crit.        1,023.324
=====
Note:                    *p<0.1; **p<0.05; ***p<0.01
```

Una vez que tengo el modelo, lo uso para ejemplificar el **EPeP**,

```
dnorm(coef(Epep.probit)[1]+coef(Epep.probit)[2]*mean(mroz$nwifeinc))
```

```
(Intercept)
0.3929979
```

```
phi <- function(z) (1/sqrt(2*pi))*exp(-z^2/2)

phi(coef(Epep.probit)[1]+coef(Epep.probit)[2]*mean(mroz$nwifeinc))
```

```
(Intercept)
0.3929979
```

```
# Efecto de aumentar el salario en una unidad son 1000 USD
```

```
dnorm(coef(Epep.probit)[1]+coef(Epep.probit)[2]*mean(mroz$nwifeinc))*coef(Epep.probit)[2]*1000
```

```
(Intercept)
-0.5052942
```

El mismo ejemplo para **logit**

```
Epep.logit <- glm(inlf~nwifeinc,
                  mroz,
                  family = binomial(link = "logit"))
stargazer::stargazer(Epep.logit, type = "text")
```

```
=====
                        Dependent variable:
                        -----
                                inlf
                        -----
nwifeinc                      -0.021***
                                (0.007)

Constant                      0.695***
                                (0.152)

                        -----
Observations                    753
Log Likelihood                 -509.654
Akaike Inf. Crit.             1,023.309
=====
Note:                          *p<0.1; **p<0.05; ***p<0.01
```

```
# fda logística estándar
```

```
lambda.minus <- function(z) exp(z)/(1+exp(z))^2
```

```
lambda.minus(coef(Epep.logit)[1]+coef(Epep.logit)[2]*mean(mroz$nwifeinc))*coef(Epep.logit)[2]
```

(Intercept)  
-50.91089

Existen dos problemas con el uso del **EPeP**. Primero, si algunas de las variables explicativas son discretas, sus promedios no representan a nadie en la muestra. Por ejemplo, si  $x_1 = \text{mujeres}$  y 47.5% de la muestra son mujeres ¿qué sentido tiene insertar  $\bar{x}_1 = 0.475$  para representar a la persona “promedio”? Segundo, si una variable explicativa continua aparece como función no lineal, por ejemplo, como un log-natural o cuadrática, no es claro si se quiere promediar la función no lineal o insertar el promedio en la función no lineal. Por ejemplo, ¿Se debe usar  $\log(\bar{\text{ventas}})$  o  $\log(\text{ventas})$  para representar el tamaño promedio de la empresa?. Los paquetes econométrico se quedan en el primero, el paquete está programado para calcular los promedios de los regresores incluidos en la estimación probit o logit.

Un método diferente para calcular un factor escalar elude la cuestión de qué valores a insertar para las variables explicativas. En lugar de ello, el segundo factor escalar resulta al promediar los efectos parciales individuales a través de la muestra, lo que genera en algunas veces llamado **efecto parcial promedio (EPP)**. Por ejemplo, para una variable aproximadamente continua el **EPP** es:

$$n^{-1} \sum_{i=1}^n [g(\hat{\beta}_0 + \mathbf{x}_i \hat{\beta}) \hat{\beta}_j] = n^{-1} \sum_{i=1}^n [g(\hat{\beta}_0 + \mathbf{x}_i \hat{\beta})] \hat{\beta}_j [24]$$

El término que se multiplica a  $\hat{\beta}_j$  actúa como un factor escalar:

$$n^{-1} \sum_{i=1}^n [g(\hat{\beta}_0 + \mathbf{x}_i \hat{\beta})] [25]$$

Los factores escalares que sirven para obtener el *EPP* y *EPeP* que fueron detallados anteriormente de la aproximación del cálculo, ninguna es lógica para variables explicativas discretas. Es su lugar, se debe estimar directamente el cambio de probabilidad. Para un cambio  $x_k$  de  $c_k$  a  $c_k + 1$ , es análogo al efecto parcial en el promedio:

$$G[\hat{\beta}_0 + \hat{\beta}_1 \bar{x}_1 + \dots + \hat{\beta}_{k-1} \bar{x}_{k-1} + \hat{\beta}_k (c_k + 1)] - G[\hat{\beta}_0 + \hat{\beta}_1 \bar{x}_1 + \dots + \hat{\beta}_{k-1} \bar{x}_{k-1} + \hat{\beta}_k c_k] [26]$$

El efecto parcial promedio es:

$$n^{-1} \sum_{i=1}^n (G[\hat{\beta}_0 + \hat{\beta}_1 x_{i1} + \dots + \hat{\beta}_{k-1} x_{ik-1} + \hat{\beta}_k (c_k + 1)] - G[\hat{\beta}_0 + \hat{\beta}_1 x_{i1} + \dots + \hat{\beta}_{k-1} x_{ik-1} + \hat{\beta}_k c_k]) [27]$$

La función anterior se puede interpretar de forma particular cuando  $x_k$  es binaria. Para cada unidad  $i$ , se estima la diferencia predicha en la probabilidad de que  $y_i = 1$  cuando  $x_k = 1$  y  $x_k = 0$ , de la siguiente forma:

$$n^{-1} \sum_{i=1}^n G[\hat{\beta}_0 + \hat{\beta}_1 x_{i1} + \dots + \hat{\beta}_{k-1} x_{ik-1} + \hat{\beta}_k] - G[\hat{\beta}_0 + \hat{\beta}_1 x_{i1} + \dots + \hat{\beta}_{k-1} x_{ik-1}] [28]$$

Para finalizar la aplicación de MPL, Logit y Probit. Es importante tener un tipo de efecto marginal que sea interpretable para los modelos no lineales (logit y probit), estos se obtienen de la siguiente manera usando el ejemplo de:

### 3.6.9.1.1 Efecto parcial promedio ejemplo

```
# Para probit
```

```
mean(dnorm(coef(Epep.probit)[1]+coef(Epep.probit)[2]*mroz$nwifeinc))*coef(Epep.probit)[2]*10
```

```
nwifeinc
-0.4998448
```

```
# Para logit
```

```
mean(lambda.minus(coef(Epep.logit)[1]+coef(Epep.logit)[2]*mroz$nwifeinc))*coef(Epep.logit)[2]
```

```
nwifeinc
-0.5021655
```

[Participación en la fuerza laboral de las mujeres casadas]

```
library(mfx)
```

```
# Probando lo hecho a mano
```

```
probitmfx(inlf~
          nwifeinc,
          data = mroz)
```

Call:

```
probitmfx(formula = inlf ~ nwifeinc, data = mroz)
```

Marginal Effects:

|          | dF/dx      | Std. Err. | z       | P> z        |
|----------|------------|-----------|---------|-------------|
| nwifeinc | -0.0050529 | 0.0015912 | -3.1755 | 0.001496 ** |

---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

```
# Efectos marginales Probit
marginales.probit<-probitmfx(inlf~
  nwifeinc+
  educ+
  exper+
  expersq+
  age+
  kidslt6+
  kidsge6,
  data = mroz)
```

```
marginales.probit$mfkest[1:7]*100
```

```
[1] -0.46961881  5.11284287  4.81768957 -0.07370502 -2.06430891
[6] -33.91499645  1.40630594
```

```
# Efectos marginales Logit
marginales.logit<-logitmfx(inlf~
  nwifeinc+
  educ+
  exper+
  expersq+
  age+
  kidslt6+
  kidsge6,
  data = mroz)
```

```
marginales.logit$mfkest[1:7]*100
```

```
[1] -0.51900534  5.37773087  5.00569282 -0.07669166 -2.14030205
[6] -35.09498193  1.46162143
```

```
# Comparación entre logit y probit
```

```
variables<-c("nwifeinc", "educ", "exper", "expersq", "age", "kidslt6", "kidsge6")
```

```
comparacion <-data.frame(variables,marginales.logit$mfcest[1:7]*100, marginales.probit$mfcest[1:7]*100)
names(comparacion)<-c("Betas", "Logit", "Probit")
```

```
comparacion
```

|            | Betas        | Logit        | Probit |
|------------|--------------|--------------|--------|
| 1 nwifeinc | -0.51900534  | -0.46961881  |        |
| 2 educ     | 5.37773087   | 5.11284287   |        |
| 3 exper    | 5.00569282   | 4.81768957   |        |
| 4 expersq  | -0.07669166  | -0.07370502  |        |
| 5 age      | -2.14030205  | -2.06430891  |        |
| 6 kidslt6  | -35.09498193 | -33.91499645 |        |
| 7 kidsge6  | 1.46162143   | 1.40630594   |        |

```
100000/12
```

```
[1] 8333.333
```

Una vez, establecidos los valores de los betas interpretables, podemos pasar a mirar la exactitud del estimaciones de los dos modelos no lineales.

### 3.6.10 Porcentaje predicho correctamente y la matriz de confusión

En lugar de solo calcular el PPC, se presentará la matriz de confusión que permite mostrar cuantas veces el modelo predijo correctamente los valores de  $y$

```
library(vcd)

#Probit
predi.probit <- ifelse(mroz.probit$fitted.values>0.5,1,0)

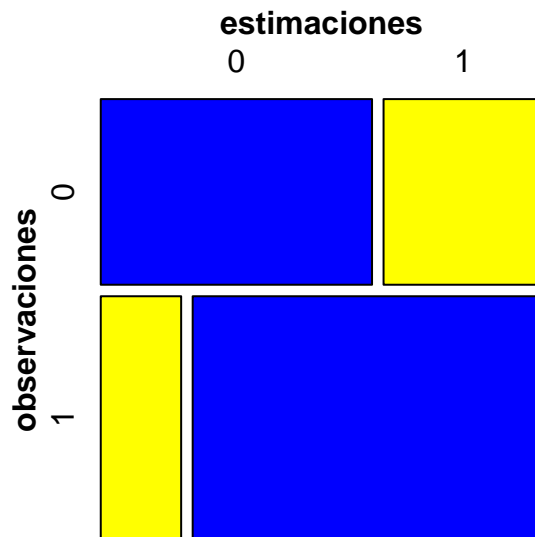
MCProbit <- table(mroz$inlf, predi.probit,
                  dnn = c("observaciones", "estimaciones"))
PPC.probit <- data.frame(mroz$inlf, predi.probit, ifelse(mroz$inlf==predi.probit,1,0))
names(PPC.probit)=c("inlf", "Valores ajustados", "PPC")

prop.table(table(PPC.probit$PPC))[2]*100
```



1  
73.43958

```
mosaic(MCProbit,  
  shade = T,  
  colorize = T,  
  gp = gpar(fill = matrix(c("blue", "yellow", "yellow", "blue"),  
    2,2)))
```



```
library(gmodels)  
  
CrossTable(mroz$inlf, predi.probit,  
  digits = 2,  
  format = "SPSS",  
  prop.c = F,  
  prop.chisq = F,  
  prop.t = F,  
  dnn=c("Observado", "estimado"))
```

Cell Contents  
|-----|

|       | Count       |
|-------|-------------|
|       | Row Percent |
| ----- | -----       |

Total Observations in Table: 753

|              | estimado |        |           |
|--------------|----------|--------|-----------|
| Observado    | 0        | 1      | Row Total |
| -----        | -----    | -----  | -----     |
| 0            | 205      | 120    | 325       |
|              | 63.08%   | 36.92% | 43.16%    |
| -----        | -----    | -----  | -----     |
| 1            | 80       | 348    | 428       |
|              | 18.69%   | 81.31% | 56.84%    |
| -----        | -----    | -----  | -----     |
| Column Total | 285      | 468    | 753       |
| -----        | -----    | -----  | -----     |

**1. Sensitividad:** % de positivos (1) que sob clasificados como positivos (1). para el modelo probit seria ( $\frac{347}{428} = 81.07\%$ )

**2. Especificidad:** % negativos(0) que son clasificado como negativops(0). . en nuestro ejemplo\_: ( $\frac{207}{325} = 63.98\%$ )

**Falsos positivos:** % de negativos (o) clasificados como positivos (1). En nuestro ejemplo: ( $\frac{120}{325} = 36.92\%$ )

**Falsos Negativos:** % de positivos clasificados (1) como negativos (0). en nuestro ejemplo. ( $\frac{80}{428} = 18.69\%$ )

```

predi.logit <- ifelse(mroz.logit$fitted.values>=0.5,1,0)

m.confu.logit<- table(mroz$inlf, predi.logit,
                      dnn = c("observaciones", "estimaciones"))
PPC.logit <- data.frame(mroz$inlf, predi.logit, ifelse(mroz$inlf==predi.logit,1,0))
names(PPC.logit)=c("inlf", "Valores ajustados", "PPC")

prop.table(table(PPC.logit$PPC))[2]*100

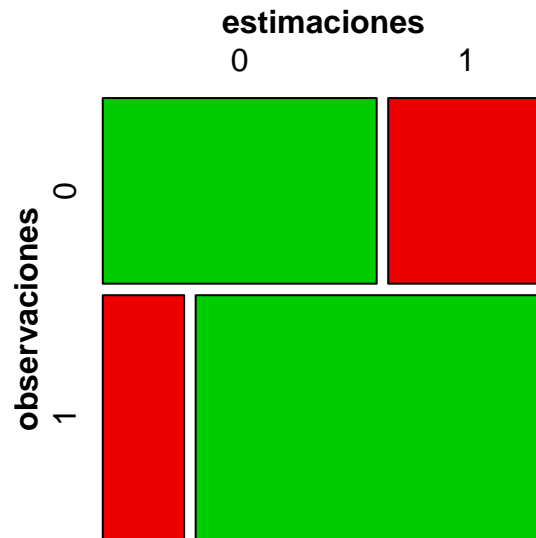
```

1  
73.57238

```

mosaic(m.confu.logit, shade = T, colorize = T,
       gp = gpar(fill = matrix(c("green3", "red2", "red2", "green3"),
                                2,2)))

```



```

CrossTable(mroz$inlf, predi.logit,
           digits = 2,
           format = "SPSS",
           prop.c = F,
           prop.chisq = F,
           prop.t = F,
           dnn=c("Observado", "estimado"))

```

| Cell Contents |             |
|---------------|-------------|
|               | Count       |
|               | Row Percent |
|               |             |

Total Observations in Table: 753

| estimado

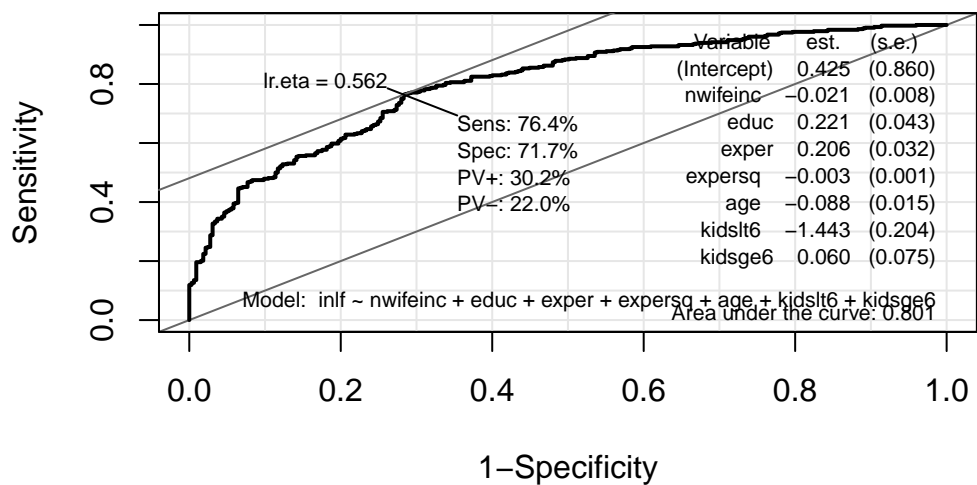
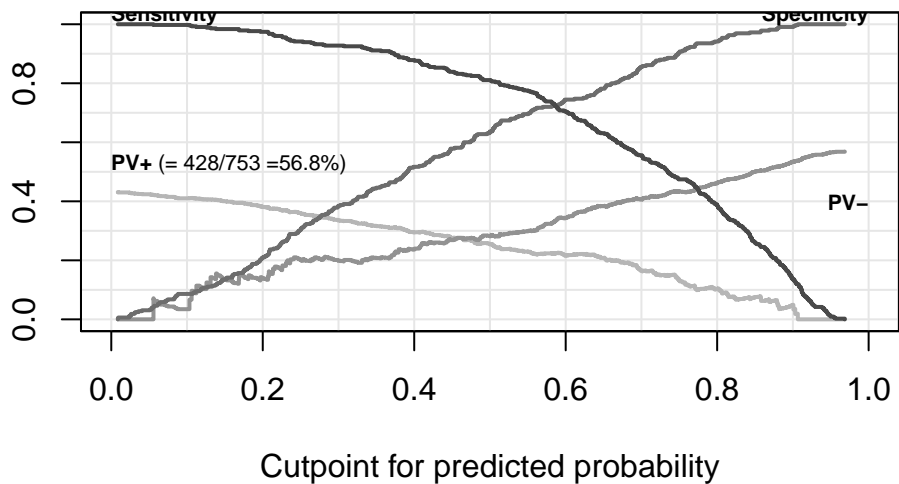
| Observado    | 0             | 1             | Row Total     |
|--------------|---------------|---------------|---------------|
| 0            | 207<br>63.69% | 118<br>36.31% | 325<br>43.16% |
| 1            | 81<br>18.93%  | 347<br>81.07% | 428<br>56.84% |
| Column Total | 288           | 465           | 753           |

Los modelos logit y probit son capaces de clasificar correctamente el 73.5 de las observaciones cuando se emplean los datos de trabajo femenino.

### 3.6.11 Capacidad discriminante del modelo

```
library("Epi")

ROC(form=inlf~nwifeinc+
     educ+
     exper+
     expersq+
     age+
     kidslt6+
     kidsge6,
     data = mroz)
```



**Sensibilidad:** la probabilidad de que el modelo prediga un resultado positivo (1) para una observación cuando en realidad el resultado es positivo (1)

**Especificidad:** La probabilidad de que el modelo prediga un resultado negativo para una observación cuando en realidad el resultado es negativo.

## 4 Ejercicio 17.2 del libro de Wooldridge

Sea *grad* una variable binaria para si un atleta colegial en una universidad grande se graduará en cinco años. Sean *hsGPA* y *SAT* el promedio de calificaciones de bachillerato y las puntuaciones del *SAT* de admisión a la universidad, respectivamente. Sea *study* el número de horas por semana que pasa un estudiante en un aula de estudio. Suponga que, usando los datos sobre 420 atletas colegiales se obtiene el siguiente modelo logit:

$$\widehat{P}(\text{grad} = 1 | \text{hsGPA}, \text{SAT}, \text{study}) = \Lambda(-1.17 + 0.24\text{hsGPA} + 0.00058\text{SAT} + 0.073\text{study})$$

$$\Lambda = \frac{\exp(z)}{[1 + \exp(z)]}$$

Si mantiene *hsGPA* = 3.0 y el *SAT* = 1200, calcule la diferencia estimada en la probabilidad de graduación para alguien que pasa 10 horas a la semana en el aula de estudio y alguien que pasa 5 horas por semana.

```
lambda <-(-1.17+0.24*3+0.00058*1200+0.073*10)
lambda_5 <- (-1.17+0.24*3+0.00058*1200+0.073*5)

diferencia <-(exp(lambda)/(1+exp(lambda)))-(exp(lambda_5)/(1+exp(lambda_5)))
diferencia*100
```

```
[1] 7.814493
```

## 5 Tareas

1. Tarea: realizar todos los cálculos para el modelo de los arrestos, igual como se hizo en clase para los dos modelos, es decir, con y sin variables binarias.

## 6 Modelo Tobit

### 6.1 Motivación

Otro tipo de variable dependiente limitada es una de respuesta de solución de esquina. La variable dependiente es cero para una fracción no trivial *representativa*, pero también existen valores de una distribución **aproximadamente continua** a través de valores positivos. Por ejemplo, el salario, habrá algunos individuos que ganen cero dólares por hora y otros que ganen valores aproximadamente continuos. Otro ejemplo, la cantidad que el individuo gasta en alcohol cada mes. Esta variable asume un amplio rango de valores en personas mayores a los 18 años.

### 6.2 Especificación matemática

Sea  $y$  una variable que asume datos aproximadamente continuos en valores estrictamente positivos, pero que asume cero con probabilidad positiva. En este caso se podría usar un modelo lineal para  $y$ . De hecho, un modelo lineal podría ser una buena aproximación a  $E(y|x_1, x_2, \dots, x_k)$  en especial para  $x_j$  cerca de los valores promedio. Nuevamente, obtendríamos valores ajustado negativos, lo que generaría predicciones negativas para  $y$ , es decir, problemas análogos a los del MPL. También el supuesto de que una variable explicativa que aparece en la forma de nivel tiene un efecto parcial constante sobre  $E(y|\mathbf{X})$  puede ser engañoso. Probablemente la  $Var(y|\mathbf{X})$  sería no constante o heterocedástica, debido a que la distribución de  $y$  se acumula en cero; esta claro que  $y$  no puede tener una distribución normal condicional. Por lo tanto, al igual que en el MPL la inferencia sólo se justifica asintóticamente.

Es importante tener un modelo que implique valores predichos no negativos para  $y$  y, que tenga efectos parciales sensatos sobre un amplio rango de las variables independientes. Además, algunas veces es necesario estimar las características de la distribución de  $y$  dadas  $x_1, \dots, x_k$  más allá de la expectativa condicional. El **Modelo Tobit** es idóneo, el cual expresa la respuesta observada,  $y$ , en términos de una variable latente subyacente:

$$\begin{aligned}y^* &= \beta_0 + \mathbf{x} + u, u|\mathbf{x} \sim Normal(0, \sigma^2)[1] \\ y &= \max(0, y^*)[2]\end{aligned}$$

La variable latente  $y^*$  satisface los supuesto del modelo lineal clásico, en particular tiene:



- Distribución normal
- Homocedástica con una media condicional lineal

La ecuación [2] implica que la variable observable,  $y = y^* \Leftrightarrow y^* \geq 0$ , caso contrario  $y = 0 \Leftrightarrow y^* < 0$ . Debido a que  $y^*$  se distribuye como una normal,  $y$  tiene una distribución continua a través de valores estrictamente positivos. En particular, la densidad de  $y|\mathbf{X}$  es la misma de  $y^*|\mathbf{X}$  para valores positivos, Además:

$$P(y = 0|\mathbf{x}) = P(y^* < 0|\mathbf{x}) = P(u < -\mathbf{x}|\mathbf{x}) = P(u|\sigma < -\mathbf{x}|\mathbf{x}) = \Phi(-\mathbf{x} / \sigma) = 1 - \Phi(\mathbf{x} / \sigma) [3]$$

Notar que  $u/\sigma \sim N(0,1)$  y es independiente de  $\mathbf{x}$ ; se ha absorbido el intercepto en  $\mathbf{x}$  por simplicidad notacional. Por lo tanto, si  $\mathbf{x}_i, y_i$  se extraen aleatoriamente de la población, la densidad de  $y_i|\mathbf{x}_i$  es:

$$(2\pi\sigma^2)^{-1/2} \exp[-(y_i - \mathbf{x}_i)^2 / (2\sigma^2)] = (1/\sigma) \phi[(y_i - \mathbf{x}_i) / \sigma], y_i > 0 [4]$$

$$P(y_i = 0|\mathbf{x}_i) = 1 - \Phi(\mathbf{x}_i / \sigma) [5]$$

Donde  $\phi$  es la función de densidad normal estándar

De las ecuaciones [4] y [5] se obtiene la función log-verosimilitud para cada observación  $i$ :

$$l_i(\beta, \sigma) = 1(y_i = 0) \log[1 - \Phi(\mathbf{x}_i / \sigma)] + 1(y_i > 0) \log((1/\sigma) \phi[(y_i - \mathbf{x}_i) / \sigma]) [6]$$

Notese que, esto depende de  $\sigma$ , la desviación estándar de  $u$ , así como de las  $\beta_j$ . La log-verosimilitud para una  $n$  aleatoria se obtiene al sumar [6], a través de todas  $i$ . Las estimaciones de máxima verosimilitud de  $\beta$  y  $\sigma$  se obtienen al maximizar la log-verosimilitud; esto requiere métodos numéricos, pero el software lo realiza.

Para restricciones de exclusión múltiples es fácil usar la prueba de **Wald** o la razón de verosimilitudes.

### 6.3 Interpretaciones de las estimaciones Tobit.

Los resultados de Tobit y MCO son casi siempre similares, lo que hace tentador interpretar las  $\hat{\beta}_j$  de Tobit como si fueran estimaciones de MCO, pero se advierte que no es así de fácil.

La [1] muestra que las  $\beta_j$  miden efectos parciales de las  $x_j$  sobre el  $E(y^*|\mathbf{x})$ . La variable que se busca explicar es  $y$ , pues es el resultado observado (las horas trabajadas o la cantidad donaciones)

De la ecuación [5] podemos obtener  $P(y = 0|\mathbf{x})$ , de ahí podemos estimar  $P(y > 0|\mathbf{x})$  ¿Qué pasa si se quiere estimar el valor esperado de  $y$  en función  $\mathbf{x}$ ? En los modelos Tobit, existe dos expectativas. La primera  $E(y|y > 0, \mathbf{x})$ , que recibe el nombre de **expectativa condicional**. La segunda es  $E(y|\mathbf{x})$ , conocida como la **expectativa no condicional**. La expectativa  $E(y|y > 0, \mathbf{x})$  nos dice que, para los valores dados de  $\mathbf{x}$ , el valor esperado de  $y$  para la subpoblación donde  $y > 0$ , esta expectativa se hallar con facilidades a partir  $E(y|\mathbf{x})$ :

$$E(y|\mathbf{x}) = P(y > 0|\mathbf{x}) \cdot E(y|y > 0, \mathbf{x}) = \Phi(\mathbf{x} / \sigma) \cdot E(y|y > 0, \mathbf{x}) [7]$$

Para obtener  $E(y|y > 0, \mathbf{x})$  se puede usar un resultado para las variables aleatorias con distribución normal: si  $z \sim Normal(0, 1)$  entonces  $E(z|z > c) = \phi(c)/[1 - \Phi(c)] \forall c$  constante. Pero  $E(y|y > 0, \mathbf{x}) = \mathbf{x} + E(u|u > -\mathbf{x} / \sigma) = \mathbf{x} + \sigma E[(u/\sigma)|(u/\sigma) > -\mathbf{x} / \sigma] = \mathbf{x} + \sigma \phi(\mathbf{x} / \sigma) / \Phi(\mathbf{x} / \sigma)$

Debido a que:  $\phi(-c) = \phi(c)$ ,  $1 - \Phi(c) = \Phi(-c)$ ,  $u/\sigma \sim Normal(0, 1)$  independiente de  $\mathbf{x}$ . Podemos reescribir a [7] así:

$$E(y|y > 0, \mathbf{x}) = \mathbf{x} + \sigma \lambda(\mathbf{x} / \sigma)$$

Donde:  $\lambda(c) = \frac{\phi(c)}{\Phi(c)}$  recibe el nombre de la **razón inversa de Mills**

## 6.4 Ejemplo

Estimación Tobit y MCO de las horas anuales trabajadas

La variables

- Dependiente ( $Y$ ) son las horas anuales trabajadas por las mujeres
- Variables explicativas o regresoras:
  - *nwifeinc*: Salario de esposo en miles de dólares
  - *educ*: años de educación
  - *exper* : años de experiencia
  - *exper*<sup>2</sup>: años de experiencia al cuadrado
  - *age* : edad de las mujeres
  - *kidslt6*: Niños menores a seis años
  - *kidsge6*: Niños entre 6 y 18 años

### 6.4.1 Verificar que la variable dependiente sea de solución de esquina

activación de paquetes

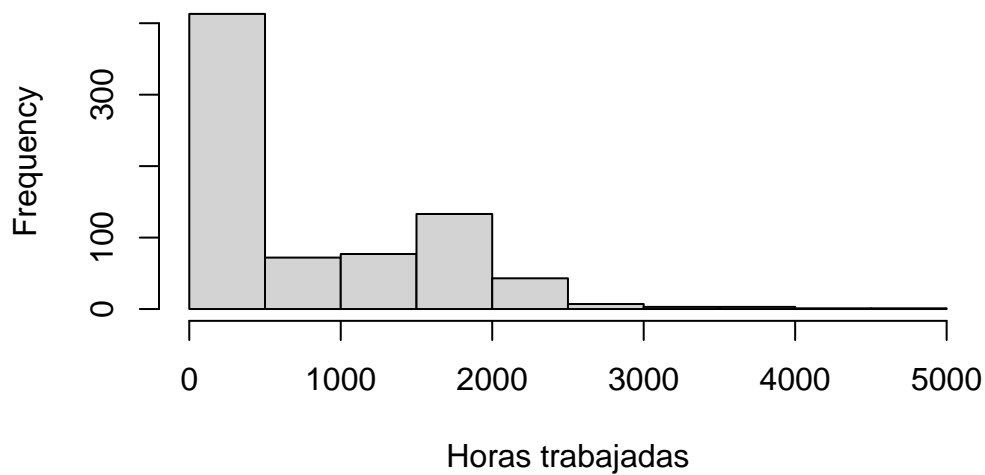
```
pacman::p_load(wooldridge,  
               dplyr,  
               ggplot2,  
               stargazer,  
               censReg,  
               AER)
```

```
datos <- data("mroz")
```

```
# Histograma
```

```
hist(mroz$hours, main = "Histograma de las horas trabajadas", xlab = "Horas trabajadas")
```

**Histograma de las horas trabajadas**

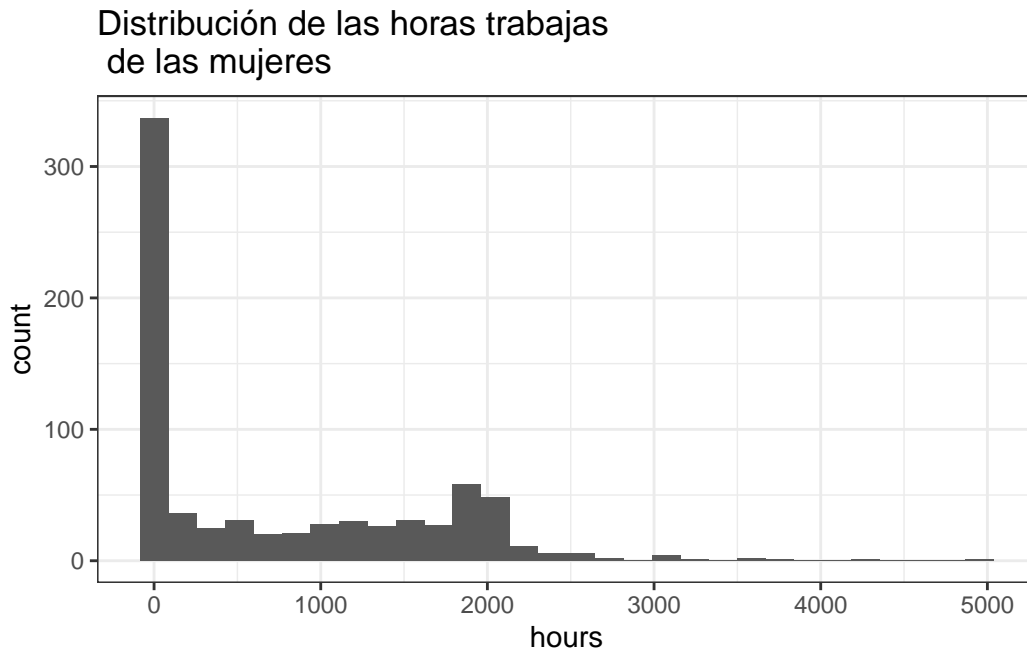


```
library(ggplot2)  
  
ggplot(data = mroz, aes(x=hours))+  
  geom_histogram(binwidth=10)+
```

```
theme_bw()+
labs(title = "Distribución de las horas trabajas\n de las mujeres")
```

Warning in geom\_histogram(bindwidth = 10): Ignoring unknown parameters:  
`bindwidth`

`stat\_bin()` using `bins = 30`. Pick better value with `binwidth`.



En el anterior histograma se puede observar que las mayor cantidad de obervaciones se encuentran en cero, así tenemos indicios de que la variable  $y$  es de solución de esquina, pues a además, la horas trabajadas anuales se amplían hasta 5000 al año. Para saber la proporcion de ceros que tiene la variable dependiente dicotomizamos dicha variables

```
# Transformación de la variable en binaria
mroz$dico.hours <- ifelse(mroz$hours==0,0,1)

# Calculando el porcentaje de ceros en Y
prop.table(table(mroz$dico.hours))*100
```

| 0        | 1        |
|----------|----------|
| 43.16069 | 56.83931 |

## 6.4.2 Usando MCO

Vamos a determinar las horas trabajadas al año por la mujeres, usando MCO

```
model.mco<-lm(hours~
              nwifeinc+
              educ+
              exper+
              expersq+
              age+
              kidslt6+
              kidsge6,
              data=mroz)

library(stargazer)

stargazer(model.mco,
          type = "text",
          dep.var.labels = "Horas al año trabajadas")
```

```
=====
                        Dependent variable:
-----
                        Horas al año trabajadas
-----
nwifeinc                -3.447
                        (2.544)

educ                    28.761**
                        (12.955)

exper                   65.673***
                        (9.963)

expersq                 -0.700**
                        (0.325)

age                    -30.512***
                        (4.364)

kidslt6                 -442.090***
```

```

(58.847)

kidsge6          -32.779
                  (23.176)

Constant          1,330.482***
                  (270.785)

-----
Observations      753
R2                0.266
Adjusted R2       0.259
Residual Std. Error 750.179 (df = 745)
F Statistic       38.495*** (df = 7; 745)
=====
Note:             *p<0.1; **p<0.05; ***p<0.01

```

# Si la variable "y" ajustada tiene valores menores que cero, significa que no es un buen ajuste

```
summary(model.mco$fitted.values)
```

| Min.   | 1st Qu. | Median | Mean  | 3rd Qu. | Max.   |
|--------|---------|--------|-------|---------|--------|
| -719.8 | 417.5   | 737.7  | 740.6 | 1093.1  | 1614.7 |

```
summary(mroz$hours)
```

| Min. | 1st Qu. | Median | Mean  | 3rd Qu. | Max.   |
|------|---------|--------|-------|---------|--------|
| 0.0  | 0.0     | 288.0  | 740.6 | 1516.0  | 4950.0 |

Como me arroja valores negativos ajustados, significa que el MCO no esta ajustando de forma adecuada a la variable *y* de solución de esquina. Además, el efecto es constante. Esto me sugiere que se debe usar un modelo Tobit para ajustar una variable de solución de esquina.

### 6.4.3 Modelo Tobit

Por lo antes mencionado, ajustamos a la variable *hours* con un modelo **Tobit**

Verificar el cumplimiento de la variable *hours* para usar un modelo Tobit.

```
# Porcentaje de ceros en la variable hours
```

```
mroz$dico <- ifelse(mroz$hours==0,0,1)
prop.table(table(mroz$dico))*100
```

```
      0      1
43.16069 56.83931
```

En este ejemplo aproximadamente el 43% de los datos de *hours* son cero y el resto datos aproximadamente continuos

Procedemos a ajustar un modelo Tobit

```
modelo.tobit <- censReg(hours~
  nwifeinc+
  educ+
  exper+
  expersq+
  age+
  kidslt6+
  kidsge6,
  data=mroz,
  left = 0)
```

```
modelo.tobit2 <- tobit(hours~
  nwifeinc+
  educ+
  exper+
  expersq+
  age+
  kidslt6+
  kidsge6,
  data=mroz)
```

Una vez, ejecutadas las dos regresiones (MCO y Tobit) las ponemos a comparación, de tal forma que, se replique la **Tabla 17.2B** del libro de Wooldridge (2010)

```
stargazer(model.mco,
  modelo.tobit,
  modelo.tobit2 ,
```

```

digits = 2,
type = "text",
df=F,
title = "Estimación Tobit y MCO de las horas anuales trabajas",
dep.var.labels = "Variable dependiente: horas anuales trabajadas",
header = F,
column.labels = c("MCO", "Tobit", "Tobit2"),
model.names = F)

```

#### Estimación Tobit y MCO de las horas anuales trabajas

| =====    |  |                        |                        |
|----------|--|------------------------|------------------------|
|          | Dependent variable:                            |                        |                        |
|          | -----  |                        |                        |
|          | Variable dependiente: horas anuales trabajadas |                        |                        |
|          | MCO  | Tobit                  | Tobit2                 |
|          | (1)  | (2)                    | (3)                    |
| -----    |  |                        |                        |
| nwifeinc | -3.45<br>(2.54)                                | -8.81**<br>(4.46)      | -8.81**<br>(4.46)      |
| educ     | 28.76**<br>(12.95)                             | 80.65***<br>(21.58)    | 80.65***<br>(21.58)    |
| exper    | 65.67***<br>(9.96)                             | 131.56***<br>(17.28)   | 131.56***<br>(17.28)   |
| expersq  | -0.70**<br>(0.32)                              | -1.86***<br>(0.54)     | -1.86***<br>(0.54)     |
| age      | -30.51***<br>(4.36)                            | -54.41***<br>(7.42)    | -54.41***<br>(7.42)    |
| kidslt6  | -442.09***<br>(58.85)                          | -894.02***<br>(111.88) | -894.02***<br>(111.88) |
| kidsge6  | -32.78<br>(23.18)                              | -16.22<br>(38.64)      | -16.22<br>(38.64)      |
| logSigma |  | 7.02***<br>(0.04)      |                        |



|                     |                             |                      |                      |
|---------------------|-----------------------------|----------------------|----------------------|
| Constant            | 1,330.48***<br>(270.78)     | 965.31**<br>(446.44) | 965.31**<br>(446.44) |
| -----               |                             |                      |                      |
| Observations        | 753                         | 753                  | 753                  |
| R2                  | 0.27                        |                      |                      |
| Adjusted R2         | 0.26                        |                      |                      |
| Log Likelihood      |                             | -3,819.09            | -3,819.09            |
| Akaike Inf. Crit.   |                             | 7,656.19             |                      |
| Bayesian Inf. Crit. |                             | 7,697.81             |                      |
| Residual Std. Error | 750.18                      |                      |                      |
| F Statistic         | 38.50***                    |                      |                      |
| Wald Test           |                             |                      | 253.86***            |
| =====               |                             |                      |                      |
| Note:               | *p<0.1; **p<0.05; ***p<0.01 |                      |                      |

Si quiero hacer comparables las estimaciones Tobit con MCO se debe multiplicar por el factor de ajuste. El factor escalar  $\mathbf{EPP} \ n^{-1} \sum_{i=1}^n \Phi(\mathbf{x}_i' / \hat{\sigma})$  resulta que es aproximadamente de 0.589. Por ejemplo, *educ* por 0.589 se obtiene  $0.589(80.65) \approx 47.50$ , por lo tanto, si una mujer aumenta un año a su educación, en promedio se sumara 47.5 horas de trabajo, esto es mayor al MCO, que es de 28.76. Se podría usar otro escalar a partir de los valores promedio de todas las variables explicativas, entonces se calcula el *EPA*  $\Phi(\bar{\mathbf{x}}_i' / \hat{\sigma})$ , es aproximadamente 0.645

### 6.4.3.1 Efecto marginal

A continuación, uso el comando *margEff()* para encontrar los efectos marginales de la estimación Tobit

```
summary(margEff(modelo.tobit))
```

|   | Marg. Eff. | Std. Error | t value | Pr(> t )  |     |
|---|------------|------------|---------|-----------|-----|
| nwifeinc  | -5.32644   | 2.69073    | -1.9796 | 0.0481217 | *   |
| educ  | 48.73409   | 12.96341   | 3.7594  | 0.0001837 | *** |
| exper   | 79.50423   | 10.30497   | 7.7151  | 3.886e-14 | *** |
| expersq   | -1.12651   | 0.32326    | -3.4848 | 0.0005213 | *** |
| age   | -32.87692  | 4.45770    | -7.3753 | 4.383e-13 | *** |
| kidslt6   | -540.25683 | 66.62393   | -8.1091 | 2.220e-15 | *** |
| kidsge6   | -9.80053   | 23.36134   | -0.4195 | 0.6749580 |     |
| ---   |            |            |         |           |     |
| Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1 |            |            |         |           |     |

## Interpretaciones

- Si el salario del esposo aumenta en 1000 dólares al año, las horas de trabajo de la mujer disminuyen en 5.32 horas. El mayor efecto, que es altamente significativo, sigue siendo el aumento de niños pequeños, pues en promedio, si se aumenta un infante menor a seis años las horas de trabajo decrecen en 540 horas al año.

### 6.4.4 No linealidad del modelo Tobit

```
mod.stobit <- censReg(hours~kidslt6 ,  
                      left = 0,  
                      data=mroz)  
mod.Smco <- lm(hours~kidslt6,  
               data=mroz)  
  
stargazer(mod.stobit, type = "text")
```

```
=====
                        Dependent variable:
                        -----
                                hours
                        -----
kidslt6                      -774.751***
                              (116.086)

logSigma                      7.191***
                              (0.038)

Constant                     489.522***
                              (59.105)

-----
Observations                  753
Log Likelihood                -3,930.753
Akaike Inf. Crit.             7,867.505
Bayesian Inf. Crit.           7,881.377
=====
Note:                        *p<0.1; **p<0.05; ***p<0.01
```

```
# Añadiendo la curva de regresión Tobit

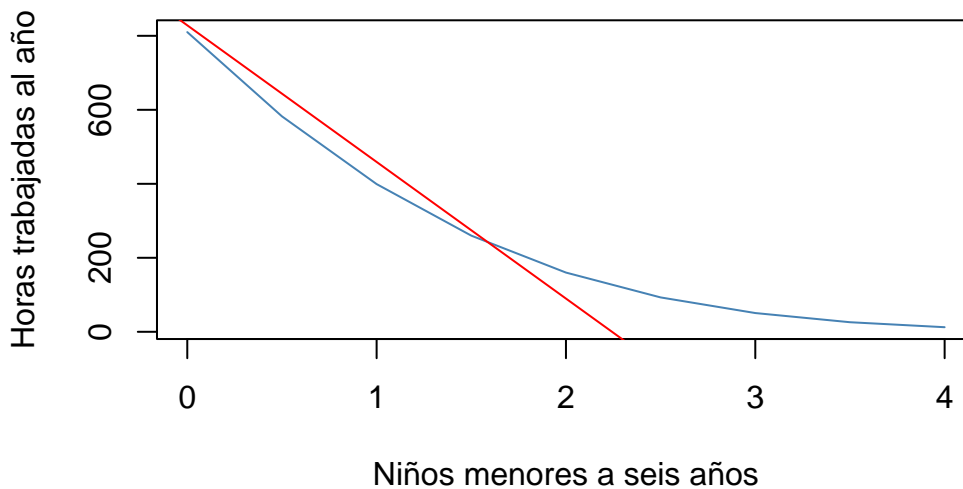
x <- seq(0,4, 0.5)

y <- pnorm((coef(mod.stobit)[1]+coef(mod.stobit)[2]*x)/exp(coef(mod.stobit)[3]))*(coef(mod.stobit)[4]+coef(mod.stobit)[5]*x)

plot(x=x,
     y=y,
     xlab = "Niños menores a seis años",
     ylab="Horas trabajadas al año",
     col="steelblue",
     main="Modelo Tobit para la relación niños pequeños y horas trabajadas de una mujer",
     type="l")

abline(mod.Smco, col="red")
```

## Tobit para la relación niños pequeños y horas trabajadas d



En el gráfico anterior podemos observar que añadir un niño menor a seis años hace que se reduzca las horas dedicadas al trabajo. Sin embargo, en la línea azul del modelo Tobit la reducción de horas es decreciente a medida que se tiene más hijos pequeños, en el MCO (línea de color rojo), la reducción de las horas trabajadas es la misma con el apareamiento de menor a seis años. Es decir, no importa si pasas de cero hijo a uno hijo o de 3 a 4, la reducción de las horas trabajadas es la misma. No está tomando en cuenta el aprendizaje de la madre con cada nuevo hijo.

#### 6.4.4.1 Evaluación informal del modelo Tobit [Problemas de especificación]

```
probit.tobit <-glm(dico.hours~
  nwifeinc+
  educ+
  exper+
  expersq+
  age+
  kidslt6+
  kidsge6,
  data=mroz,
  family = binomial(link = "probit"))

stargazer(probit.tobit,
  type = "text",
  title = "Estimación Tobit y MCO de las horas anuales trabajadas",
  dep.var.labels = "Variable dependiente: horas anuales trabajadas 0 y 1")
```

Estimación Tobit y MCO de las horas anuales trabajadas

```
=====
                        Dependent variable:
-----
Variable dependiente: horas anuales trabajadas 0 y 1
-----
```

|          |                      |
|----------|----------------------|
| nwifeinc | -0.012**<br>(0.005)  |
| educ     | 0.131***<br>(0.025)  |
| exper    | 0.123***<br>(0.019)  |
| expersq  | -0.002***<br>(0.001) |
| age      | -0.053***<br>(0.008) |
| kidslt6  | -0.868***            |

```

(0.118)

kidsge6          0.036
                  (0.044)

Constant         0.270
                  (0.508)

-----
Observations      753
Log Likelihood    -401.302
Akaike Inf. Crit. 818.604
=====
Note:              *p<0.1; **p<0.05; ***p<0.01

```

Luego procedemos a usar los coeficientes para la comparación entre el modelo Probit y el Tobit, el objetivo es evaluar la validez del modelo Tobit.

```

z <- coef(probit.tobit)
m <- coef(modelo.tobit)

comparacion <- data.frame(z, (m[1:8])/exp(m[9]), z-(m[1:8])/exp(m[9]))
names(comparacion) <- c("probit", "beta/sigma", "diferencia")
comparacion

```

|             | probit       | beta/sigma   | diferencia   |
|-------------|--------------|--------------|--------------|
| (Intercept) | 0.270073573  | 0.860326776  | -0.590253203 |
| nwifeinc    | -0.012023637 | -0.007855680 | -0.004167957 |
| educ        | 0.130903969  | 0.071875266  | 0.059028703  |
| exper       | 0.123347168  | 0.117256469  | 0.006090698  |
| expersq     | -0.001887067 | -0.001661427 | -0.000225640 |
| age         | -0.052852442 | -0.048488379 | -0.004364063 |
| kidslt6     | -0.868324680 | -0.796795431 | -0.071529248 |
| kidsge6     | 0.036005611  | -0.014454263 | 0.050459873  |

Tobit de *nwifeinc* entre  $\hat{\sigma} = 1122.02$ , se obtuvo  $-8.81/1122.02 = -0.0079$ ; el coeficiente probit de *nwifeinc* es de cerca de  $-0.012$ , lo cual es diferente, pero no de forma drástica. En *kidslt6*, el coeficiente estimado entre  $\hat{\sigma}$  es de cerca de  $-0.797$ , en comparación con la estimación probit de  $-0.868$ . De nuevo, ésta no es una diferencia enorme, pero indica que tener niños pequeños tiene un efecto mayor sobre la decisión inicial de participar en la fuerza laboral que sobre cuántas horas elige trabajar una mujer una vez que está en dicha fuerza. (Tobit promedia de

forma efectiva estos dos efectos.) No se sabe si los efectos son estadísticamente diferentes, pero son del mismo orden de magnitud.

Por lo tanto, se podría decir que el modelo Tobit es adecuado, para ajustar a la variable *hours*

¿Qué sucede si se concluye que el modelo Tobit es inadecuado? Existen modelos, que suelen conocerse como modelos de **dos partes** o **de obstáculos**, que se pueden usar cuando Tobit es inadecuado

# 7 Modelo Poisson

## 7.1 Introducción y motivación

Una tercera clase de variable dependiente no negativa es una **variable de conteo**, que puede asumir valores enteros no negativos:  $[0, 1, 2, \dots]$ , específicamente los que nos interesa son los casos en los que  $y$  asume pocos valores, incluido el cero. Ejemplos:

- El número de medallas que puede obtener un deportista en una olimpiada,
- El número de hijos que tiene una mujer
- El número de publicaciones al año de un científico

Al igual que las respuestas, binaria y Tobit, un modelo lineal para  $E(y|x_1, x_2, \dots, x_k)$ , quizá no proporciona el mejor ajuste a lo largo de todos los valores de las variables explicativas. Sin embargo, es informativo comenzar con un modelo lineal.

Como en un modelo **Tobit** no se puede obtener el logaritmo de una variable de conteo que asume valores de cero. Un método útil es modelar el valor esperado como una función exponencial:

$$E(y|x_1, x_2, \dots, x_k) = \exp(\beta_0 + \beta_1 x_1 + \dots + \beta_k x_k) [1]$$

```
pacman::p_load(wooldridge,  
               stargazer,  
               tidyverse)
```

### 7.1.1 Recordatorio

```
data("wage1", package = "wooldridge")  
  
#Modelo lineal  
  
salario.lm<-lm(wage~educ,
```

```

wage1)

library(stargazer)

stargazer(salario.lm,
          type = "text")

```

```

=====
                        Dependent variable:
                        -----
                                wage
                        -----
educ                                0.541***
                                (0.053)

Constant                           -0.905
                                (0.685)

=====
Observations                        526
R2                                  0.165
Adjusted R2                         0.163
Residual Std. Error      3.378 (df = 524)
F Statistic               103.363*** (df = 1; 524)
=====
Note:          *p<0.1; **p<0.05; ***p<0.01

```

```

# Gráfica de la relación salario y la educación

plot(wage~educ,
     wage1,
     pch=20,
     col="steelblue",
     ylab = "Salario en USD por hora",
     xlab="años de educación",
     main="La relación entre el salario y la educación")

abline(0,0)

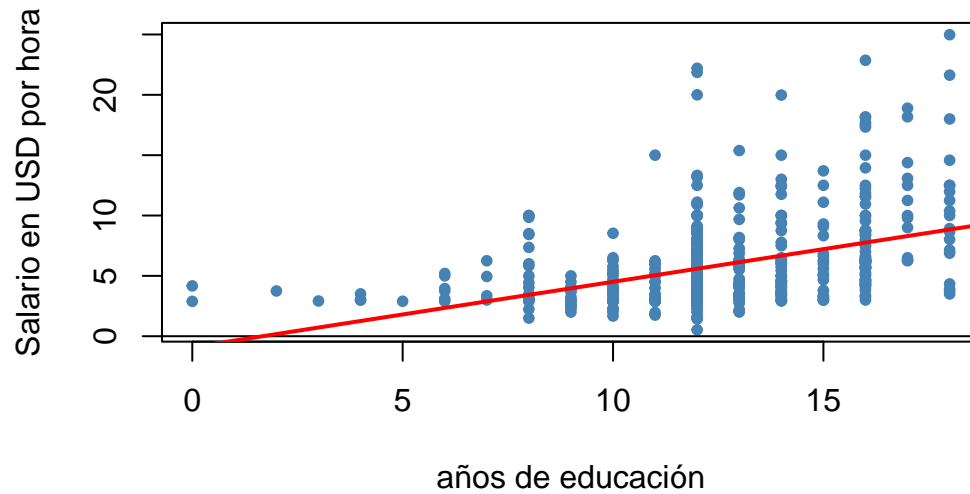
abline(salario.lm,

```

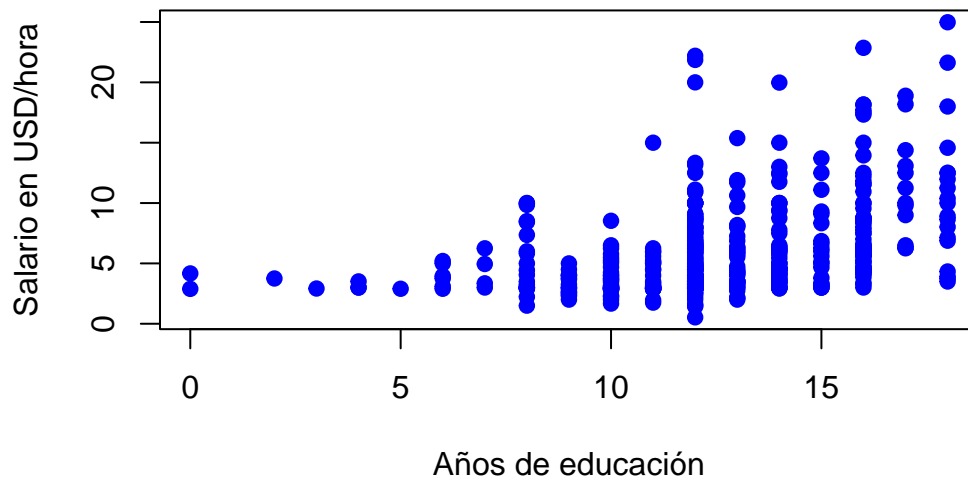


```
lw=2,  
col="red")
```

## La relación entre el salario y la educación



```
plot(y=wage1$wage,  
      x=wage1$educ,  
      col="blue",  
      pch=19,  
      xlab="Años de educación",  
      ylab="Salario en USD/hora")
```



### Interpretaciones

- Un aumento de un año de educación, esta asociado en promedio a un incremento en el salario de 54 centavos por cada trabajada.

Es decir que la forma funcional al parecer, es la siguiente:

$$wage = \exp(\beta_0 + \beta_1 educ + u) \quad [2]$$

La ecuación [2] no es lineal en los parámetros, para usar el modelo de regresión se usa un cambio usando la función logarítmica, tenemos:

$$\log(wage) = \beta_0 + \beta_1 educ + u$$

```
log.lin<-lm(log(wage)~educ,
            wage1)
stargazer(log.lin,
          type = "text")
```

```
=====
Dependent variable:
```

```

-----
                                log(wage)
-----
educ                                0.083***
                                (0.008)

Constant                            0.584***
                                (0.097)

-----
Observations                        526
R2                                  0.186
Adjusted R2                        0.184
Residual Std. Error      0.480 (df = 524)
F Statistic                119.582*** (df = 1; 524)
=====
Note:                *p<0.1; **p<0.05; ***p<0.01

```

## Intepretación

```
exp(coef(log.lin)[1])
```

(Intercept)

1.792789

- $e^{0.584} = 1.79$  Si no hay cambios en la educación, se predice un ingreso promedio por hora trabajada de 1.79 USD
- Un aumento de un año en la educación esta asociado a un incremento de 8.3% en el salario por hora trabajada

```
# Gráfica de la relación salario y la educación
```

```

plot(log(wage)~educ,
     wage1,
     pch=20,
     col="steelblue",
     ylab = "Salario en USD por hora",
     xlab="años de educación",
     main="La relación entre el salario y la educación")

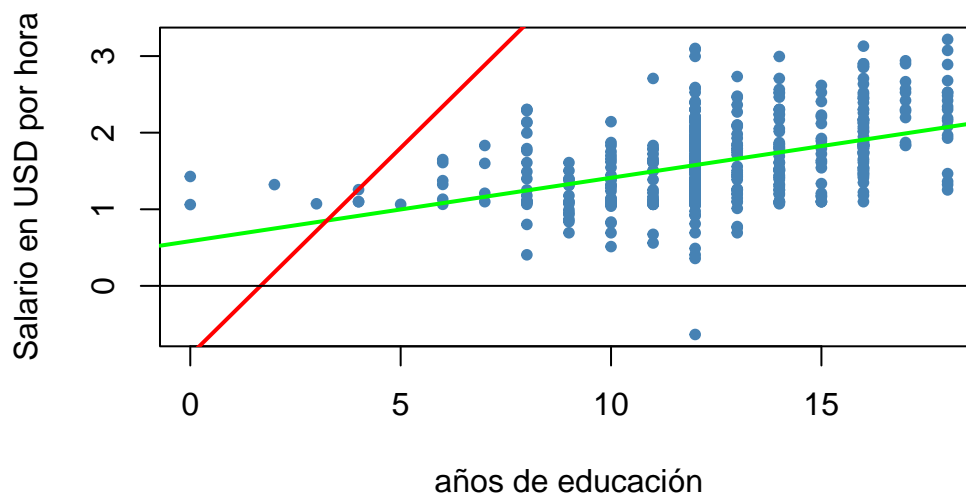
```

```
abline(log.lin,
       lw=2,
       col="green")

abline(salario.lm,
       col="red",
       lwd=2)

abline(0,0)
```

## La relación entre el salario y la educación



### 7.1.2 Otro ejemplo

```
data("CASchools", package = "AER")

CASchools$Notas<-(CASchools$read+CASchools$math)/2

lineal.model<-lm(Notas~income,
                 CASchools)
lineal.log<-lm(Notas~log(income),
               CASchools)
```

```

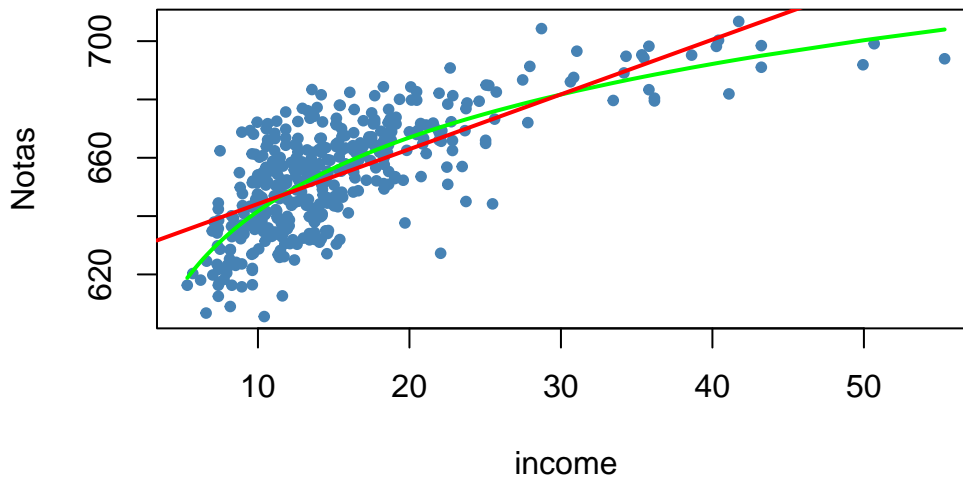
plot(Notas~income,
     CASchools,
     col="steelblue",
     pch=20,
     main="Linea de regresión Notas-ingreso")

order_id2<-order(CASchools$income)

lines(CASchools$income[order_id2],
      fitted(lineal.log)[order_id2],
      col="green",
      lwd=2)
abline(lineal.model,
      col="red",
      lwd=2)

```

### Linea de regresión Notas-ingreso



Volviendo a la ecuación [1], debido a que  $\exp(\cdot)$  siempre es positivo. [1] asegura que los valores predichos para  $y$  también sean positivos. Aunque [1] es más complicada que un modelo lineal, básicamente ya se sabe como interpretar los coeficientes, al obtener el logaritmo de la ecuación [1]

$$\log[E(y|x_1, \dots, x_k)] = \beta_0 + \beta_1 x_1 + \dots + \beta_k x_k \quad [2]$$

es decir, que el logaritmo del valor esperado es lineal. Por lo tanto, mediante las propiedades de la aproximación de la función logaritmo tenemos:

$$\% \Delta E(y|\mathbf{x}) \approx (100\beta_j)\Delta x_j [3]$$

Es decir,  $100\beta_j$  es el cambio porcentual en  $E(y|\mathbf{x})$ , dado un incremento de una unidad en  $x_j$ . A veces, es necesaria una estimación más precisa y es fácil de encontrar una, al observar los cambios discretos en el valor esperado. Manteniendo todas las variables explicativas fijas, excepto  $x_j$  y, sea  $x_k^0$  el valor inicial y  $x_k^1$  el valor siguiente. Entonces, el cambio proporcional en el valor esperado es:

$$[\exp(\beta_o + \mathbf{x}_{k-1} \beta_{k-1} + \beta_k x_k^1) / \exp(\beta_o + \mathbf{x}_{k-1} \beta_{k-1} + \beta_k x_k^0)] - 1 = \exp(\beta_k \Delta x_k) - 1 [4]$$

Donde:  $\mathbf{x}_{k-1} \beta_{k-1}$  es una abreviatura de  $\beta_1 x_1 + \dots + \beta_{k-1} x_{k-1}$  y,  $\Delta x_k = x_k^1 - x_k^0$ . Cuando  $\Delta x_k = 1$ , la variable  $x_k$  es binaria que se cambia de cero a uno, entonces el cambio es  $\exp(\beta_k) - 1$ . Dada  $\hat{\beta}_k$ , se obtiene  $\exp(\hat{\beta}_k) - 1$  y se multiplica por el 100 para transformar el cambio proporcional en un cambio porcentual.

Si por ejemplo  $x_j = \log(z_j)$  para alguna variable  $z_j > 0$ , entonces su coeficiente  $\beta_j$  se interpreta como una elasticidad respecto a  $z_j$ .

Debido a que [1] es no lineal en sus parámetros, no se puede usar métodos de regresión lineal. Entonces usamos la **estimación máxima verosimilitud (EMV)** y también el método relacionado a la **estimación de cuasi máxima verosimilitud (ECMV)**.

A lo largo de los cursos de econometría se ha presentado la normalidad como el supuesto de distribución estándar para regresión lineal. Este supuesto no puede usarse en una variable de conteo (pues la distribución normal es para variables continuas que asuman todos los valores) que asume sólo pocos valores, la distribución será muy distinta a la normal. En su lugar, la distribución nominal para los datos de conteo es la **distribución Poisson**.

Como nos interesa el efecto de las variables explicativas sobre  $y$ , se debe observar la distribución de Poisson condicional a  $\mathbf{x}$ . La distribución Poisson está determinada por completo por su media, así sólo se necesita especificar  $E(y|\mathbf{x})$ , esta tiene la misma forma de [1] que se abrevia  $\exp(\mathbf{x})$ . Entonces, la probabilidad de que  $y$  será igual al valor  $h$ , condicional sobre  $\mathbf{x}$ , es:

$$P(y = h|\mathbf{x}) = \exp[-\exp(\mathbf{x})][\exp(\mathbf{x})]^h / h!, h = 0, 1, \dots [5]$$

Donde  $h!$  denota el factorial. Esta distribución, que es la base del **modelo de regresión de Poisson**, permite hallar las probabilidades condicionales para cualquier valor de variables explicativas. Por ejemplo,  $P(y = 0|\mathbf{x}) = \exp[-\exp(\mathbf{x})]$ . Una vez que se tienen las estimaciones de  $\beta_j$ , se pueden insertar en las probabilidades para diferentes valores  $\mathbf{x}$ .

Dada una muestra aleatoria  $[(\mathbf{x}_i, y_i) : i = 1, 2, \dots, n]$ , se puede construir la función **log-verosimilitud**:

$$\mathcal{L}(\beta) = \sum_{i=1}^n l_i(\beta) = \sum_{i=1}^n [y_i \mathbf{x}_i - \exp(\mathbf{x}_i)] \quad [6]$$

Se desecha el término  $\log(y_i!)$ . Esta función se maximiza usando EMV, aunque la EMV de Poisson no es cerrada.

Igual que los modelo logit, probit y Tobit, no se pueden comparar directamente las magnitudes de las estimaciones del Poisson de una función exponencial con las estimaciones de MCO. se hace comparables de la siguiente forma:

### 7.1.2.1 Variables explicativas continuas

Se aplica el efecto parcial de  $x_j$  respecto a  $E(y|x_1, x_2, \dots, x_k)$ :

$$\frac{\partial E(y|x_1, x_2, \dots, x_k)}{\partial x_j} = \exp(\beta_0 + \beta_1 x_1 + \dots + \beta_k x_k) \times \beta_j [7]$$

Es interesante el factor escalar **EPP**:

$$n^{-1} \sum_{i=1}^n \exp(\hat{\beta}_0 + \hat{\beta}_1 x_1 + \dots + \hat{\beta}_k x_k) = n^{-1} \sum_{i=1}^n \hat{y}_i [8]$$

es simplemente el promedio muestral  $\bar{y}$  de  $y_i$  donde se definen los valores ajustados como  $\hat{y}_i = \exp(\hat{\beta}_0 + \mathbf{x}_i^T \hat{\boldsymbol{\beta}})$ . Es decir, para la regresión Poisson con una función media exponencial, el promedio de los valores ajustados es el mismo que el promedio de los resultados originales de  $y_i$ , tal como el caso de regresión lineal. Esto simplifica el escalar de las estimaciones Poisson  $\hat{\beta}_j$ , para hacerlas comparables a las estimaciones MCO,  $\hat{\gamma}_j$  para una variable explicativa continua, se puede comparar con  $\hat{\gamma}_j$  con  $\bar{y} \cdot \hat{\beta}_j$

Aunque el análisis de EMV de Poisson es un primer paso para los datos de conteo, suele ser muy restrictivo. Todas las probabilidades y los momentos mayores de la distribución Poisson se determinan por completo por la media. Por ejemplo, la varianza es igual a la media:

$$\text{Var}(y|\mathbf{x}) = E(y|\mathbf{x}) \quad [9]$$

Esto es restrictivo y se viola en muchas aplicaciones. Por fortuna, la distribución de Poisson tiene una propiedad de robustez muy buena, es decir, que se mantenga o no la distribución de Poisson, se obtienen estimadores asintóticamente normales y consistentes con las  $\beta_j$

Cuando se EMV de Poisson, pero no se supone que la distribución de Poisson sea correcta, este análisis recibe el nombre de **Estimación de cuasi máxima verosimilitud (ECMV)**. LA ECMV de Poisson es muy útil debido a que esta programada en muchos paquetes econométricos. Sin embargo, a menos que el supuesto de varianza de Poisson [9] se mantenga, se deben ajustar los errores estándar, de la siguiente forma:

El ajuste a los errores estándar está disponible cuando se supone que la varianza es proporcional a la media:

$$Var(y|\mathbf{x}) = \sigma^2 E(y|\mathbf{x}) \quad [10]$$

Donde:  $\sigma^2$  es un parámetro desconocido.

- Cuando  $\sigma^2 = 1$  se obtiene el supuesto de varianza de Poisson [9]
- Si  $\sigma^2 > 1$  la varianza es mayor que la media para toda  $\mathbf{x}$ , esto se llama **sobredispersión** común en regresiones de conteo.
  - Si  $\sigma^2 < 1$  la varianza es menor que la media para toda  $\mathbf{x}$ , esto se llama **subdispersión** es poco común.

Bajo [10] es fácil ajustar los errores estándar de la EMV de Poisson. Si  $\hat{\beta}_j$  denota la ECMV de Poisson y se definen los residuales como  $\hat{u}_i = y_i - \hat{y}_i$ , donde  $\hat{y}_i = \exp(\hat{\beta}_0 + \hat{\beta}_1 x_{i1} + \dots + \hat{\beta}_k x_{ik})$ . Un estimador consistente de  $\sigma^2 = (n - k - 1)^{-1} \sum_{i=1}^n \frac{\hat{u}_i^2}{\hat{y}_i}$ , donde la división entre  $\hat{y}_i$  es el ajuste apropiado de heterocedasticidad y  $n - k - 1 = gl$  dadas las  $n$  observaciones y  $k + 1$  estimadores  $\hat{\beta}_0, \hat{\beta}_1, \dots, \hat{\beta}_k$ . Si  $\sigma = \sqrt{\sigma^2}$ , se multiplican los errores estándar Poisson usuales por  $\hat{\sigma}$ . Si  $\hat{\sigma}$  es notablemente mayor que uno, los errores estándar corregidos pueden ser mucho mayores que los errores estándar nominales, generalmente son incorrectos, de la EMV de Poisson.

Bajo el supuesto de distribución de Poisson, se puede usar el estadístico de la razón de verosimilitudes para probar las restricciones de exclusión, que siempre, tienen la forma de  $RV = 2(l_{nr} - L_r)$ . Si se tiene  $q$  restricciones de exclusión, el estadístico se distribuye aproximadamente con  $\chi_q^2$  bajo la hipótesis nula. Bajo el supuesto menos restrictivo de [10], un simple ajuste está disponible si se divide  $RV = 2(l_{nr} - L_r)$  entre  $\sigma^2$  donde  $\sigma^2$  se obtiene del modelo no restringido.

## 7.2 Ejemplo [Regresión de Poisson para número de arrestos]

La base de datos **crime1** contiene información sobre arrestos durante 1986 y otros datos, sobre 2725 hombres nacidos en California en 1960 o 1961. Cada hombre de la muestra fue arrestado al menos una vez antes 1986.

Las variables:

- **narr86**: indica el número de veces que un hombre fue arrestado durante 1986: esta variable es cero para la mayoría de los hombres de la muestra (72.29%) y varía desde 0 hasta 12. (El porcentaje de hombres detenidos una sola vez durante 1986 es 20.51%)



```
pacman::p_load(wooldridge,
               tidyverse)

data("crime1")

crime1 %>%
str()
```

```
'data.frame': 2725 obs. of 16 variables:
 $ narr86 : int 0 2 1 2 1 0 2 5 0 0 ...
 $ nfarr86: int 0 2 1 2 1 0 2 3 0 0 ...
 $ nparr86: int 0 0 0 1 0 0 1 5 0 0 ...
 $ pcnv : num 0.38 0.44 0.33 0.25 0 ...
 $ avgsen : num 17.6 0 22.8 0 0 ...
 $ tottime: num 35.2 0 22.8 0 0 ...
 $ ptime86: int 12 0 0 5 0 0 0 0 9 0 ...
 $ qemp86 : num 0 1 0 2 2 4 0 0 0 3 ...
 $ inc86 : num 0 0.8 0 8.8 8.1 ...
 $ durat : num 0 0 11 0 1 ...
 $ black : int 0 0 1 0 0 0 1 0 1 0 ...
 $ hispan : int 0 1 0 1 0 0 0 0 0 1 ...
 $ born60 : int 1 0 1 1 0 1 1 1 1 1 ...
 $ pcnvsq : num 0.1444 0.1936 0.1089 0.0625 0 ...
 $ pt86sq : int 144 0 0 25 0 0 0 0 81 0 ...
 $ inc86sq: num 0 0.64 0 77.44 65.61 ...
 - attr(*, "time.stamp")= chr "25 Jun 2011 23:03"
```

```
# Tabla de porcentaje
crime1 %>%
  with(table(narr86)) %>%
  prop.table() %>%
  round(digits = 2) %>%
  print()
```

```
narr86
  0    1    2    3    4    5    6    7    9   10   12
0.72 0.21 0.04 0.02 0.00 0.00 0.00 0.00 0.00 0.00 0.00
```

- **pcnv:** Es la proporción (no el porcentaje) de detenciones anteriores a 1986 que condujeron a una condena (?)

```
crime1 %>%
  with(table(pcnv)) %>%
  round(digits = 2) %>%
  print()
```

```
pcnv
      0 0.0799999982118607 0.09000000035762787 0.100000001490116
      1260                2                1                1
0.109999999403954 0.129999995231628 0.140000000596046 0.170000001788139
      1                3                6                17
0.1800000007152557 0.2000000002980232 0.219999998807907 0.230000004172325
      2                24                4                4
      0.25 0.259999990463257 0.2700000010728836 0.28999999165535
      53                1                2                21
0.3000000011920929 0.3100000002384186 0.319999992847443 0.3300000013113022
      4                2                1                139
0.3600000014305115 0.379999995231628 0.389999985694885 0.400000005960464
      7                20                1                40
0.409999996423721 0.419999986886978 0.4300000007152557 0.439999997615814
      1                5                14                10
0.449999988079071 0.469999998807907      0.5 0.529999971389771
      4                3                313                1
0.5400000021457672 0.5600000002384186 0.569999992847443 0.6000000023841858
      2                8                11                34
0.620000004768372 0.629999995231628 0.639999985694885 0.6700000016689301
      1                6                2                85
0.699999988079071 0.709999978542328 0.7300000019073486      0.75
      1                2                1                20
0.8000000011920929 0.829999983310699      1
      8                3                574
```

- **avgsen** es la duración promedio de las condenas anteriores cumplidas (cero para la mayoría de casos)

```
crime1 %>%
  with(table(avgsen)) %>%
  print()
```

```
avgsen
      0 0.3000000011920929 0.8000000011920929 0.899999976158142
      2591                1                2                2
```

|                  |                   |                   |                   |
|------------------|-------------------|-------------------|-------------------|
| 1.10000002384186 | 1.39999997615814  | 2.20000004768372  | 2.29999995231628  |
| 5                | 1                 | 1                 | 1                 |
| 2.59999990463257 | 2.900000009536743 | 3.5               | 4                 |
| 2                | 1                 | 1                 | 2                 |
| 4.30000019073486 | 4.80000019073486  | 4.900000009536743 | 5.5               |
| 1                | 1                 | 1                 | 2                 |
| 5.59999990463257 | 6                 | 6.09999990463257  | 6.19999980926514  |
| 4                | 1                 | 2                 | 1                 |
| 6.30000019073486 | 6.69999980926514  | 6.900000009536743 | 7.09999990463257  |
| 1                | 1                 | 1                 | 3                 |
| 7.19999980926514 | 7.59999990463257  | 7.80000019073486  | 7.900000009536743 |
| 1                | 1                 | 2                 | 1                 |
| 8.10000038146973 | 8.19999980926514  | 8.30000019073486  | 8.39999961853027  |
| 1                | 1                 | 1                 | 1                 |
| 8.60000038146973 | 8.89999961853027  | 9                 | 9.10000038146973  |
| 2                | 1                 | 2                 | 1                 |
| 9.30000019073486 | 9.5               | 9.60000038146973  | 9.69999980926514  |
| 1                | 1                 | 1                 | 2                 |
| 9.80000019073486 | 9.89999961853027  | 10                | 10.5              |
| 1                | 1                 | 1                 | 1                 |
| 10.6000003814697 | 10.6999998092651  | 10.8999996185303  | 11                |
| 1                | 1                 | 2                 | 1                 |
| 11.1000003814697 | 11.3000001907349  | 11.3999996185303  | 11.6000003814697  |
| 1                | 1                 | 1                 | 2                 |
| 11.6999998092651 | 11.8000001907349  | 11.8999996185303  | 12.1000003814697  |
| 1                | 2                 | 3                 | 1                 |
| 12.1999998092651 | 12.3999996185303  | 12.5              | 12.6999998092651  |
| 2                | 1                 | 2                 | 1                 |
| 12.8999996185303 | 13.3000001907349  | 13.3999996185303  | 13.6999998092651  |
| 1                | 1                 | 1                 | 1                 |
| 14.1999998092651 | 14.3000001907349  | 14.3999996185303  | 14.8000001907349  |
| 1                | 1                 | 1                 | 1                 |
| 15               | 15.6999998092651  | 16                | 16.1000003814697  |
| 1                | 1                 | 1                 | 1                 |
| 16.2000007629395 | 16.5              | 16.6000003814697  | 17                |
| 1                | 1                 | 1                 | 1                 |
| 17.1000003814697 | 17.6000003814697  | 17.7000007629395  | 18.3999996185303  |
| 1                | 1                 | 1                 | 3                 |
| 18.5             | 18.7000007629395  | 18.8999996185303  | 19.2999992370605  |
| 1                | 1                 | 2                 | 2                 |
| 20.2999992370605 | 20.6000003814697  | 21.7000007629395  | 21.7999992370605  |
| 1                | 1                 | 1                 | 1                 |
| 22               | 22.7999992370605  | 23.5              | 23.8999996185303  |

|                  |                  |                  |                  |
|------------------|------------------|------------------|------------------|
| 1                | 1                | 1                | 1                |
| 24.3999996185303 | 24.6000003814697 | 30.3999996185303 | 31.2999992370605 |
| 1                | 2                | 1                | 1                |
| 31.7000007629395 | 31.8999996185303 | 35.4000015258789 | 36.0999984741211 |
| 1                | 1                | 1                | 1                |
| 39               | 40.5             | 47.0999984741211 | 59.2000007629395 |
| 1                | 1                | 1                | 1                |

- **tottime**: tiempo en prisión desde los 18 años (meses)

```
crime1 %>%
  with(table(tottime)) %>%
  print()
```

```
tottime
0 0.300000011920929 0.800000011920929 0.899999976158142
2591 1 2 2
1.10000002384186 1.39999997615814 2.20000004768372 2.29999995231628
5 1 1 1
2.59999990463257 2.90000009536743 4 4.80000019073486
2 1 2 1
5.5 5.59999990463257 6 6.19999980926514
1 2 1 1
6.69999980926514 7 7.09999990463257 7.19999980926514
1 1 1 1
7.59999990463257 7.80000019073486 8.10000038146973 8.19999980926514
1 1 1 1
8.30000019073486 8.60000038146973 8.89999961853027 9
1 2 1 1
9.10000038146973 9.30000019073486 9.5 9.60000038146973
1 1 1 1
9.80000019073486 9.89999961853027 10.5 10.8999996185303
1 1 1 1
11 11.1000003814697 11.1999998092651 11.3000001907349
2 1 1 1
11.3999996185303 11.6000003814697 11.6999998092651 11.8000001907349
1 1 1 1
11.8999996185303 12.1999998092651 12.3999996185303 12.5
3 4 1 2
12.8999996185303 13.3000001907349 13.3999996185303 13.6999998092651
1 1 1 1
14.1999998092651 14.3000001907349 14.3999996185303 14.6999998092651
```

|                  |                  |                  |                  |
|------------------|------------------|------------------|------------------|
| 2                | 1                | 1                | 1                |
| 15.6999998092651 | 16.1000003814697 | 16.5             | 16.6000003814697 |
| 1                | 1                | 1                | 1                |
| 16.7999992370605 | 17               | 17.1000003814697 | 18               |
| 1                | 1                | 1                | 1                |
| 18.3999996185303 | 18.5             | 18.8999996185303 | 19.2999992370605 |
| 2                | 1                | 2                | 2                |
| 19.3999996185303 | 20               | 20.2999992370605 | 20.7000007629395 |
| 1                | 1                | 1                | 1                |
| 21.2000007629395 | 21.2999992370605 | 21.3999996185303 | 21.7000007629395 |
| 1                | 1                | 1                | 1                |
| 21.7999992370605 | 22               | 22.3999996185303 | 22.7999992370605 |
| 1                | 1                | 1                | 1                |
| 23.2000007629395 | 23.5             | 23.7000007629395 | 23.8999996185303 |
| 1                | 1                | 1                | 1                |
| 24.2000007629395 | 24.3999996185303 | 24.6000003814697 | 25.2000007629395 |
| 1                | 1                | 1                | 1                |
| 25.7999992370605 | 29.1000003814697 | 29.6000003814697 | 30               |
| 1                | 1                | 1                | 1                |
| 30.3999996185303 | 31.2000007629395 | 31.2999992370605 | 31.8999996185303 |
| 1                | 1                | 1                | 1                |
| 32               | 32.4000015258789 | 35.2000007629395 | 35.4000015258789 |
| 1                | 1                | 1                | 3                |
| 36.0999984741211 | 36.7999992370605 | 37.4000015258789 | 38.0999984741211 |
| 1                | 1                | 1                | 1                |
| 39               | 40.5             | 41.2000007629395 | 43.5999984741211 |
| 1                | 1                | 1                | 1                |
| 47.0999984741211 | 49.2000007629395 | 59.2000007629395 | 63.4000015258789 |
| 1                | 1                | 1                | 1                |

- **ptime86**: es el tiempo en meses que se ha pasado en prisión durante 1986

```
crime1 %>%
  with(table(ptime86)) %>%
  print()
```

```
ptime86
  0    1    2    3    4    5    6    7    8    9   10   11   12
2594  7   15   8   7   5   10   7   2   4   4   4   58
```

- **qemp86**: es la cantidad de trimestres que la persona tuvo empleo en 1986 (de cero a cuatro)

```
crime1 %>%
  with(table(qemp86)) %>%
  print()
```

```
qemp86
      0 0.600000023841858 0.899999976158142      1
648      1      1      294
1.39999997615814 1.60000002384186 1.70000004768372 1.79999995231628
      1      1      1      3
      2 2.09999990463257      3 3.40000009536743
337      1      437      1
      4
999
```

- **ince86**: ingresos legales, 1986, \$100s
- **black** 1 si es negro, cero otro caso
- **hispan** 1 si es hispano, cero otro caso
- **born60** 1 nacido en 1960, cero otro caso

### 7.2.0.1 Modelo de regresión Poisson

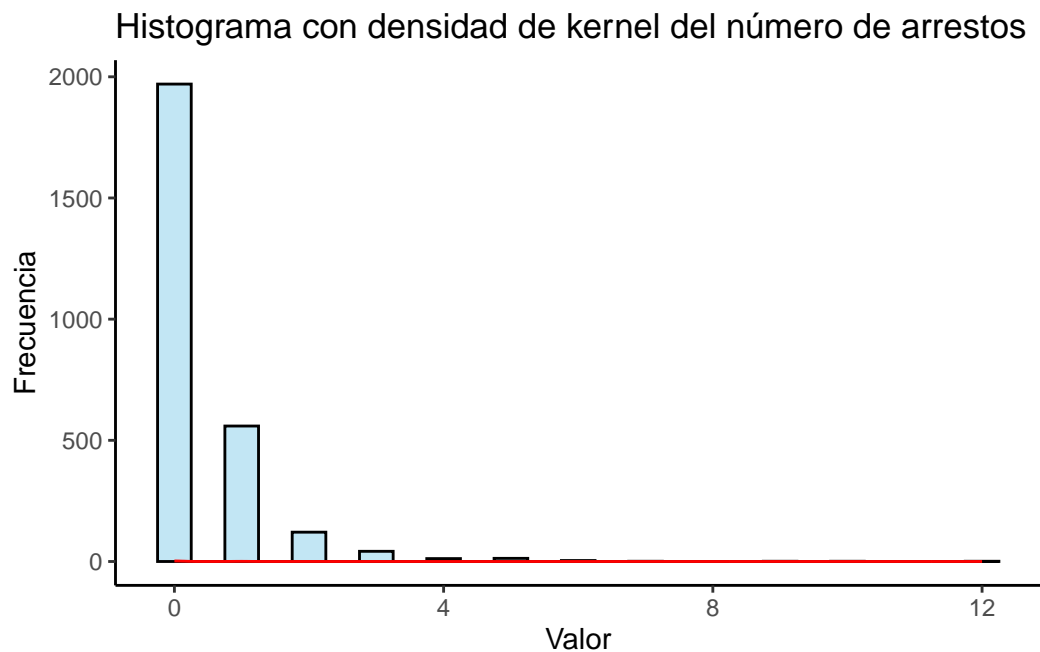
$$E[\text{narr86} \mid \mathbf{x}] = \exp \left( \beta_0 + \beta_1 \text{pcnv} + \beta_2 \text{avgsen} + \beta_3 \text{tottime} \right. \\ \left. + \beta_4 \text{ptime86} + \beta_5 \text{qemp86} + \beta_6 \text{ince86} \right. \\ \left. + \delta_1 \text{black} + \delta_2 \text{hispan} + \delta_3 \text{born} \right)$$

```
# Comprobar la variable de conteo

crime1 %>%
  with(table(narr86)) %>%
  print()
```

```
narr86
      0      1      2      3      4      5      6      7      9     10     12
1970  559  121   42   12   13    4    1    1    1    1
```

```
# Graficar la variable
ggplot(crime1, aes(x = narr86)) +
  geom_histogram(binwidth = 0.5,
                 color = "black",
                 fill = "skyblue",
                 alpha = 0.5) +
  geom_density(alpha = 0.5,
              color = "red") +
  labs(title = "Histograma con densidad de kernel del número de arrestos",
       x = "Valor", y = "Frecuencia") +
  theme_classic()
```



Ajustar el modelo usando MCO

```
narr86.MCO <- lm(narr86~
                 pcnv+
                 avgsen+
                 tottime+
                 ptime86+
                 qemp86+
                 inc86+
                 black+
                 hispan+)
```

```

I(hispan*black)+
  born60,
  crime1)

narr86.MC02 <- lm(narr86~
  hispan,
  crime1)

library(stargazer)
stargazer(narr86.MC0, narr86.MC02,type = "text")

```

| =====    |                       |                     |
|----------|-----------------------|---------------------|
|          | Dependent variable:   |                     |
|          | -----                 |                     |
|          | narr86                |                     |
|          | (1)                   | (2)                 |
| -----    |                       |                     |
| pcnv     | -0.132***<br>(0.040)  |                     |
| avgsen   | -0.011<br>(0.012)     |                     |
| totttime | 0.012<br>(0.009)      |                     |
| ptime86  | -0.041***<br>(0.009)  |                     |
| qemp86   | -0.051***<br>(0.014)  |                     |
| inc86    | -0.001***<br>(0.0003) |                     |
| black    | 0.327***<br>(0.045)   |                     |
| hispan   | 0.194***<br>(0.040)   | 0.110***<br>(0.040) |



```
I(hispan * black)
```

```
born60                -0.022  
                      (0.033)
```

```
Constant              0.577***          0.380***  
                      (0.038)          (0.019)
```

```
-----  
Observations          2,725              2,725  
R2                    0.072              0.003  
Adjusted R2           0.069              0.002  
Residual Std. Error   0.829 (df = 2715)    0.858 (df = 2723)  
F Statistic           23.572*** (df = 9; 2715) 7.671*** (df = 1; 2723)  
=====
```

```
Note:                  *p<0.1; **p<0.05; ***p<0.01
```

El modelo MCO supone que la variable  $y$  es cuantitativa aproximadamente continua, tenemos una variable de conteo

```
summary(narr86.MCO$fitted.values)
```

```
      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.   
-0.4978  0.2346   0.4092   0.4044  0.5541   1.0210
```

No esta ajustando bien, pues arroja valores ajustados negativos el modelo MCO, recordar que la variable  $y$  es de conteo y comienza en cero y termina en 12

### Ajuste con el modelo Poisson

```
narr86.poisson <- glm(narr86~  
  pcnv+  
  avgsen+  
  tottime+  
  ptime86+  
  qemp86+  
  inc86+  
  black+  
  hispan+  
  born60,  
  crime1,
```

```

        family = poisson(link = "log"))

# Comparo el modelo Poisson y MCO

stargazer(narr86.MCO, narr86.poisson,
          type = "text",
          df=F,
          digits = 3,
          title = "Tabla 1. Determinantes del número de arrestos de hombres jóvenes",
          dep.var.caption = "Variable dependiente: Número de arrestos",
          header = F,
          column.labels = c("MCO", "Poisson"),
          model.names = F,
          report = "vct*")

```

Tabla 1. Determinantes del número de arrestos de hombres jóvenes

| Variable dependiente: Número de arrestos |                         |                         |
|--|-------------------------|-------------------------|
|  | narr86                  |                         |
|  | MCO<br>(1)              | Poisson<br>(2)          |
| pcnv                                     | -0.132<br>t = -3.264*** | -0.402<br>t = -4.726*** |
| avgsen                                   | -0.011<br>t = -0.926    | -0.024<br>t = -1.192    |
| totttime                                 | 0.012<br>t = 1.279      | 0.024<br>t = 1.660*     |
| ptime86                                  | -0.041<br>t = -4.638*** | -0.099<br>t = -4.763*** |
| qemp86                                   | -0.051<br>t = -3.542*** | -0.038<br>t = -1.310    |
| inc86                                    | -0.001<br>t = -4.261*** | -0.008<br>t = -7.762*** |

|                   |                        |                         |
|-------------------|------------------------|-------------------------|
| black             | 0.327<br>t = 7.199***  | 0.661<br>t = 8.950***   |
| hispan            | 0.194<br>t = 4.880***  | 0.500<br>t = 6.761***   |
| I(hispan * black) |                        |                         |
| born60            | -0.022<br>t = -0.675   | -0.051<br>t = -0.797    |
| Constant          | 0.577<br>t = 15.215*** | -0.600<br>t = -8.916*** |

|                     |           |            |
|---------------------|-----------|------------|
| Observations        | 2,725     | 2,725      |
| R2                  | 0.072     |            |
| Adjusted R2         | 0.069     |            |
| Log Likelihood      |           | -2,248.761 |
| Akaike Inf. Crit.   |           | 4,517.522  |
| Residual Std. Error | 0.829     |            |
| F Statistic         | 23.572*** |            |

=====  
Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

```
mean(crime1$narr86)
```

```
[1] 0.4044037
```

Es común en los modelos **Poisson** que exista un mal cálculo de los errores estándar, pues puede haber sobre o sub dispersión de la varianza de acuerdo a la ecuación [10]

### 7.2.1 Estimación de $\sigma^2$

Recordemos la ecuación:

$$\sigma^2 = (n - k - 1)^{-1} \sum_{i=1}^n \frac{\hat{u}_i^2}{\hat{y}_i} [11]$$

También recordar la ecuación para los residuales

$$\hat{u}_i = y_i - \hat{y}_i[12]$$

```
residuales <- narr86.poisson$y- narr86.poisson$fitted.values

sigma2<-(sum(residuales^2/narr86.poisson$fitted.values))/narr86.MCO[["df.residual"]]
sigma2
```

```
[1] 1.516788
```

```
raiz.sigma <- sqrt(sigma2)
raiz.sigma
```

```
[1] 1.23158
```

Comprobamos que en este caso  $\hat{\sigma}^2 \approx 1.52 > 1$ , entonces existe **sobredispersión** por lo que no se cumple la [9]  $Var(y|\mathbf{X}) = E(y|\mathbf{X})$ . Por lo tanto, se esta analizando con la **ECMV**

## 7.2.2 Ajustar los errores estándar

```
library(sandwich)
ees.ajustados<-list(sqrt(diag(vcovHC(narr86.MCO, type = "HC1"))),
                    raiz.sigma*sqrt(diag(vcovHC(narr86.poisson, type = "HC1"))))

stargazer(narr86.MCO, narr86.poisson,
          type = "text",
          df=F,
          digits = 3,
          title = "Tabla 2. Determinantes del número de arrestos de hombres jóvenes (ESHRA)",
          dep.var.caption = "Variable dependiente: Número de arrestos",
          header = F,
          column.labels = c("Lineal MCO", "Exponencial ECMV-Poisson"),
          model.names = F,
          se=ees.ajustados)
```

Tabla 2. Determinantes del número de arrestos de hombres jóvenes (ESHRA)  
=====

Variable dependiente: Número de arrestos

|                   | narr86                |                                 |
|-------------------|-----------------------|---------------------------------|
|                   | Lineal MCO<br>(1)     | Exponencial ECMV-Poisson<br>(2) |
| pcnv              | -0.132***<br>(0.034)  | -0.402***<br>(0.125)            |
| avgsen            | -0.011<br>(0.014)     | -0.024<br>(0.029)               |
| totttime          | 0.012<br>(0.013)      | 0.024<br>(0.025)                |
| ptime86           | -0.041***<br>(0.007)  | -0.099***<br>(0.028)            |
| qemp86            | -0.051***<br>(0.014)  | -0.038<br>(0.042)               |
| inc86             | -0.001***<br>(0.0002) | -0.008***<br>(0.002)            |
| black             | 0.327***<br>(0.058)   | 0.661***<br>(0.123)             |
| hispan            | 0.194***<br>(0.040)   | 0.500***<br>(0.114)             |
| I(hispan * black) |                       |                                 |
| born60            | -0.022<br>(0.032)     | -0.051<br>(0.100)               |
| Constant          | 0.577***<br>(0.043)   | -0.600***<br>(0.110)            |
| Observations      | 2,725                 | 2,725                           |
| R2                | 0.072                 |                                 |
| Adjusted R2       | 0.069                 |                                 |

|                     |            |
|---------------------|------------|
| Log Likelihood      | -2,248.761 |
| Akaike Inf. Crit.   | 4,517.522  |
| Residual Std. Error | 0.829      |
| F Statistic         | 23.572***  |

=====

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

### 7.2.3 Interpretación

Como se puede ver en la Tabla 2 los errores estándar MCO y Poisson son heterocedasticos-robustos. Los errores estándar de Poisson han sido multiplicados por el valor de sigma  $\hat{\sigma} = 1.232$ , lo cual incide sobre la prueba  $t$  y por ende en su significancia estadística.

Los coeficientes del MCO y Poisson no son comparables directamente y tienen significados muy diferentes. Por ejemplo, el coeficiente de *pcnv* implica que, si  $pcnv = 0.10$  el número esperado de arrestos deciente en 0.013 ( $0.10 \times 0.132 \approx 0.013$ ) (*pcnv* es la proporción de arrestos previos que desembocaron en una condena). El coeficiente de Poisson implica que  $\Delta pcnv = 0.10$  reduce los arrestos en cerca de 4% [ $0.402 \times 0.10 \approx 0.0402$ ] y se multiplica esto por el 100% para obtener el efecto porcentual. Como cuestión de políticas, esto sugiere que se pueden reducir los arrestos generales en 4% si se incrementa la probabilidad de condena en 0.10.

El coeficiente de Poisson de **black** implica que, *ceteris paribus*, el número esperado de arrestos para los hombres negros se estima cerca de  $100 \times [\exp(0.661) - 1] \approx 93.7$ , es decir que la probabilidad de arrestos para los hombres negros es 93.7% mayor que para los hombres blancos con los mismos valores de las variables explicativas.

```
hispan<-(exp(coef(narr86.poisson)[9])-1)*100
hispan
```

```
hispan
64.84134
```

El coeficiente de Poisson de **hispan** implica que, *ceteris paribus*, el número esperado de arrestos para los hombres hispanos se estima cerca de  $100 \times [\exp(0.5) - 1] \approx 64.84$ , es decir que la probabilidad de arrestos para los hombres hispanos es 64.87% mayor que para los hombres no hispanos con los mismos valores de las variables explicativas.

### 7.2.4 Efectos marginales de la Regresión Exponencial EMCV-Poisson

```
library(mfx)
poissonmfx(narr86~
           pcnv+
           avgsen+
           tottime+
           ptime86+
           qemp86+
           inc86+
           black+
           hispan+
           born60,
           crime1)
```

Call:

```
poissonmfx(formula = narr86 ~ pcnv + avgsen + tottime + ptime86 +
            qemp86 + inc86 + black + hispan + born60, data = crime1)
```

Marginal Effects:

|         | dF/dx       | Std. Err.  | z       | P> z      |     |
|---------|-------------|------------|---------|-----------|-----|
| pcnv    | -0.13218998 | 0.02770671 | -4.7710 | 1.833e-06 | *** |
| avgsen  | -0.00782541 | 0.00656405 | -1.1922 | 0.23320   |     |
| tottime | 0.00806178  | 0.00485401 | 1.6608  | 0.09674   | .   |
| ptime86 | -0.03244365 | 0.00677624 | -4.7879 | 1.686e-06 | *** |
| qemp86  | -0.01251507 | 0.00960118 | -1.3035 | 0.19241   |     |
| inc86   | -0.00266002 | 0.00031733 | -8.3825 | < 2.2e-16 | *** |
| black   | 0.27712004  | 0.03843968 | 7.2092  | 5.627e-13 | *** |
| hispan  | 0.19144813  | 0.03242309 | 5.9047  | 3.533e-09 | *** |
| born60  | -0.01668211 | 0.02079586 | -0.8022 | 0.42245   |     |

---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

dF/dx is for discrete change for the following variables:

```
[1] "black" "hispan" "born60"
```

## 7.2.5 Interpretaciones:

- Como se puede observar los efectos marginales de Poisson ya son comparables a los coeficientes de MCO, de tal manera que, el **EPP** de Poisson para la variables **pcnv** es igual al coeficiente de MCO, es decir ambos son de **-0.13** aproximadamente. Donde existe diferencias marcadas entre el **EPP** y coeficiente de MCO es en **black** y en **hispan**.

De la misma manera que se hizo en las interpretaciones de la Tabla 2 se debe aproximar mejor el efecto parcial de las variables binarias usando la ecuación [4]. Por ejemplo para **black**:

```
black.epp <-100*(exp(0.27712004)-1)
black.epp
```

```
[1] 31.93247
```

El coeficiente de Poisson de **black** de los efectos marginales implica que, *ceteris paribus*, el número esperado de arrestos para los hombres negros se estima cerca de  $100 \times [\exp(0.2771) - 1] \approx 31.93$ , es decir que el porcentaje de arrestos para los hombres negros es 31.93% mayor que para los hombres blancos con los mismos valores de las variables explicativas.

```
hispan.epp <-100*(exp(0.19144813)-1)
hispan.epp
```

```
[1] 21.1002
```



## 8 Modelo de Dos Partes

### 8.1 Motivación

¿Qué sucede si se concluye que el modelo Tobit es inadecuado? Existen modelos que suelen conocerse como modelos de **dos partes** o de **obstáculos**, que se pueden usar cuando Tobit es inadecuado.

### 8.2 Descripción general

Los modelos de dos partes o de obstáculos se usan para modelar variables estrictamente positivas con una gran cantidad de valores cero  $y \geq 0$ . En consecuencia, existe una suerte de mezcla de una distribución binomial  $y = 1; y = 0$  y una distribución estrictamente positiva  $y > 0$ . En este caso, nos centramos en una distribución aproximadamente continua para valores positivos, aunque, este modelo se puede usar también para datos de conteo. El código en R se puede encontrar [aquí](#)

### 8.3 Ejemplo de aplicación

Recordemos el modelo

$$\widehat{hours} = \Phi \left( \frac{\beta_0 + \mathbf{X}}{\sigma} \right)$$

Donde las variables explicativas son:

- *nwifeinc*: Salario de esposo en miles de dólares
- *educ*: años de educación
- *exper* : años de experiencia
- *exper*<sup>2</sup>: años de experiencia al cuadrado
- *age* : edad de las mujeres
- *kidslt6*: Niños menores a seis años

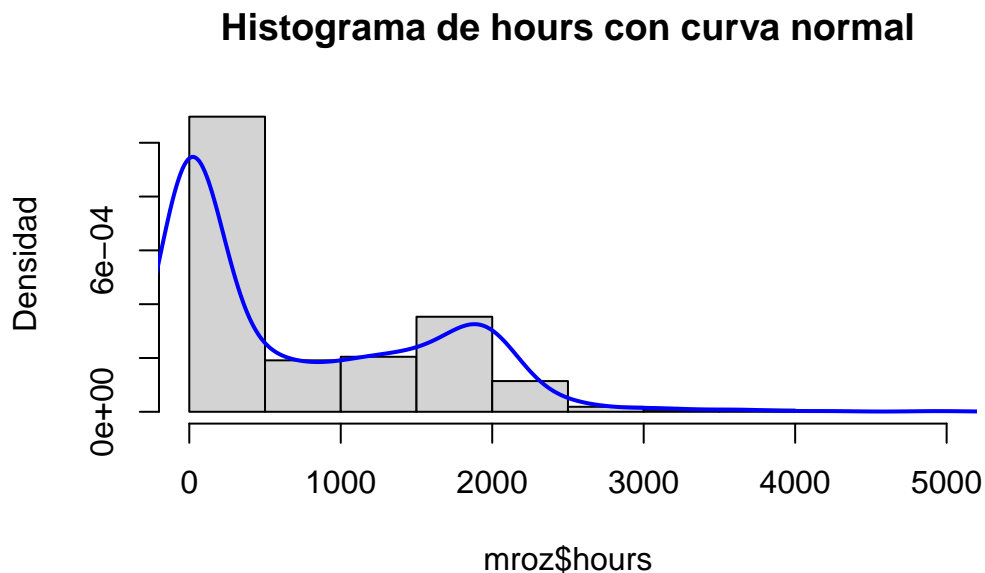
- *kidsge6*: Niños entres 6 y 18 años

```
pacman::p_load(wooldridge,
               tidyverse,
               twopartm,
               stargazer,
               data.table)

data("mroz")
#mirar la distribución de la variable hours

hist(mroz$hours,
     probability = T,
     main = "Histograma de hours con curva normal",
     ylab="Densidad")

lines(density(mroz$hours),
      col="blue",
      lwd=2)
```



La distribución de las horas esta muy sesgada a la derecha, hay muchos valores de cero y muy pocos grandes. Esto sugiere que un modelo de dos partes podría ser apropiado para estos datos. Las horas trabajadas no siguen una distribución normal. Las distribuciones sesgadas a

la derecha comunes que se podrían usar para modelar las horas trabajadas son: la distribución **lognormal** y la distribución **gamma**.

Si los datos siguen una distribución logarítmica normal, entonces el registro de horas trabajadas sigue una distribución normal

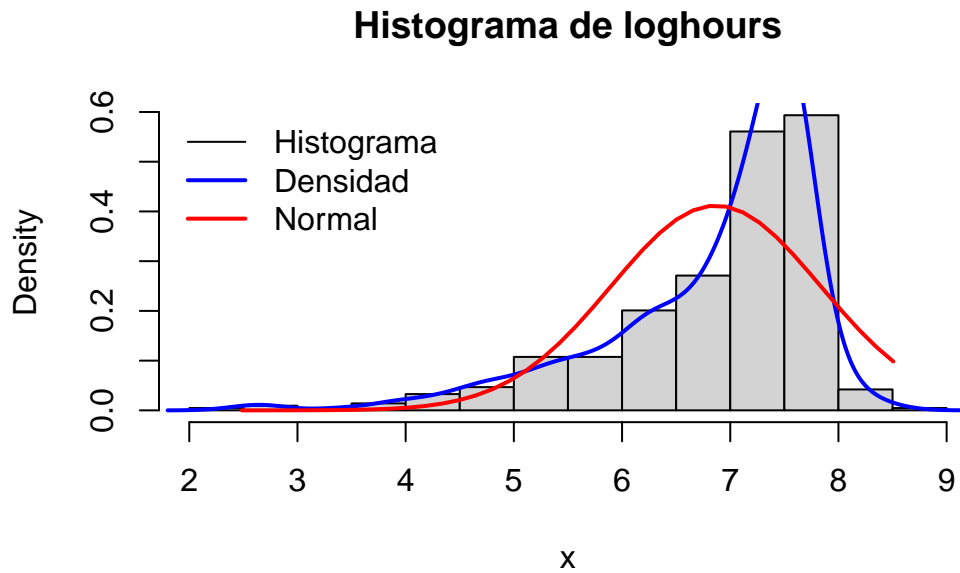
```
# Transformación de la variable hours a log(hours)

mroz$loghours <- ifelse(mroz$hours>0, log(mroz$hours), NA)

# Miremos la distribución de loghours 428

histDenNorm1 <- function (x, ...) {
  hist(x, ...) # Histograma
  lines(density(x), col = "blue", lwd = 2) # Densidad
  x2 <- seq(min(x), max(x), length = 40)
  f <- dnorm(x2, mean(x), sd(x))
  lines(x2, f, col = "red", lwd = 2) # Normal
  legend("topleft", c("Histograma", "Densidad", "Normal"), box.lty = 0,
        lty = 1, col = c("black", "blue", "red"), lwd = c(1, 2, 2))
}

histDenNorm1(mroz$loghours[1:428],
             prob=T,
             main="Histograma de loghours")
```



Una vez usada la función logaritmo sobre los valores estrictamente positivos ( $hours > 0$ ) de la variable *hours*, notamos que la distribución se acerca a una distribución normal

El comando del modelo de dos partes

```
library(twopartm)

# Conjunto de variable explicativas necesarias

xvars<-c("nwifeinc", "educ", "exper", "expersq", "age", "kidslt6", "kidsge6")

fm <- function(y, xvars){
  return(as.formula(paste(y, "~", paste(xvars, collapse = "+"))))
}

# Se creo una nueva base de datos con las variables (Provisional)
d_dospartes <- mroz %>%
  select(hours,nwifeinc, educ, exper, expersq, age, kidslt6, kidsge6) %>%
  print()
```

```
hours    nwifeinc educ  exper expersq age kidslt6 kidsge6
```

|    |      |             |    |    |      |    |   |   |
|----|------|-------------|----|----|------|----|---|---|
| 1  | 1610 | 10.91005993 | 12 | 14 | 196  | 32 | 1 | 0 |
| 2  | 1656 | 19.49998093 | 12 | 5  | 25   | 30 | 0 | 2 |
| 3  | 1980 | 12.03991032 | 12 | 15 | 225  | 35 | 1 | 3 |
| 4  | 456  | 6.79999590  | 12 | 6  | 36   | 34 | 0 | 3 |
| 5  | 1568 | 20.10005760 | 14 | 7  | 49   | 31 | 1 | 2 |
| 6  | 2032 | 9.85905361  | 12 | 33 | 1089 | 54 | 0 | 0 |
| 7  | 1440 | 9.15204811  | 16 | 11 | 121  | 37 | 0 | 2 |
| 8  | 1020 | 10.90003777 | 12 | 35 | 1225 | 54 | 0 | 0 |
| 9  | 1458 | 17.30500031 | 12 | 24 | 576  | 48 | 0 | 2 |
| 10 | 1600 | 12.92500019 | 12 | 21 | 441  | 39 | 0 | 2 |
| 11 | 1969 | 24.29995346 | 12 | 15 | 225  | 33 | 0 | 1 |
| 12 | 1960 | 19.70007133 | 11 | 14 | 196  | 42 | 0 | 1 |
| 13 | 240  | 15.00000763 | 12 | 0  | 0    | 30 | 1 | 2 |
| 14 | 997  | 14.60000038 | 12 | 14 | 196  | 43 | 0 | 2 |
| 15 | 1848 | 24.63091469 | 10 | 6  | 36   | 43 | 0 | 1 |
| 16 | 1224 | 17.53102684 | 11 | 9  | 81   | 35 | 0 | 3 |
| 17 | 1400 | 14.09998035 | 12 | 20 | 400  | 43 | 0 | 2 |
| 18 | 640  | 15.83899975 | 12 | 6  | 36   | 39 | 0 | 5 |
| 19 | 2000 | 14.10000038 | 12 | 23 | 529  | 45 | 0 | 0 |
| 20 | 1324 | 10.29996109 | 12 | 9  | 81   | 35 | 0 | 4 |
| 21 | 2215 | 22.65498161 | 16 | 5  | 25   | 42 | 0 | 2 |
| 22 | 1680 | 8.09004784  | 12 | 11 | 121  | 30 | 0 | 0 |
| 23 | 1600 | 17.47900009 | 13 | 18 | 324  | 48 | 0 | 0 |
| 24 | 800  | 9.56000042  | 12 | 15 | 225  | 45 | 0 | 0 |
| 25 | 1955 | 8.27495289  | 12 | 4  | 16   | 31 | 1 | 1 |
| 26 | 660  | 27.34998512 | 17 | 21 | 441  | 43 | 0 | 2 |
| 27 | 525  | 16.00000000 | 12 | 31 | 961  | 59 | 0 | 0 |
| 28 | 1904 | 16.99998283 | 12 | 9  | 81   | 32 | 0 | 3 |
| 29 | 1516 | 15.10005569 | 17 | 7  | 49   | 31 | 1 | 0 |
| 30 | 346  | 15.69998360 | 12 | 7  | 49   | 42 | 0 | 0 |
| 31 | 1040 | 5.11895990  | 11 | 32 | 1024 | 50 | 0 | 0 |
| 32 | 732  | 16.75001144 | 16 | 11 | 121  | 59 | 0 | 0 |
| 33 | 1880 | 13.59993172 | 13 | 16 | 256  | 36 | 0 | 2 |
| 34 | 1680 | 17.10004807 | 12 | 14 | 196  | 51 | 0 | 1 |
| 35 | 2081 | 16.73404884 | 16 | 27 | 729  | 45 | 0 | 3 |
| 36 | 690  | 14.19697762 | 11 | 0  | 0    | 42 | 0 | 1 |
| 37 | 4210 | 10.31998730 | 12 | 17 | 289  | 46 | 0 | 0 |
| 38 | 2205 | 11.38410473 | 10 | 28 | 784  | 46 | 0 | 1 |
| 39 | 1952 | 14.59407806 | 14 | 24 | 576  | 51 | 0 | 0 |
| 40 | 1302 | 17.50043869 | 17 | 11 | 121  | 30 | 0 | 0 |
| 41 | 112  | 15.50999641 | 12 | 1  | 1    | 30 | 1 | 2 |
| 42 | 893  | 21.99997520 | 12 | 14 | 196  | 57 | 0 | 0 |
| 43 | 583  | 22.50000000 | 16 | 6  | 36   | 31 | 1 | 2 |

|    |      |             |    |    |      |    |   |   |
|----|------|-------------|----|----|------|----|---|---|
| 44 | 480  | 19.99399948 | 12 | 10 | 100  | 48 | 0 | 2 |
| 45 | 1900 | 14.13000011 | 12 | 6  | 36   | 30 | 0 | 3 |
| 46 | 576  | 5.00001287  | 12 | 4  | 16   | 34 | 0 | 2 |
| 47 | 2056 | 21.15489769 | 16 | 10 | 100  | 48 | 0 | 2 |
| 48 | 1984 | 7.14194584  | 12 | 22 | 484  | 45 | 0 | 0 |
| 49 | 2640 | 16.65007210 | 12 | 16 | 256  | 51 | 0 | 0 |
| 50 | 240  | 6.35199976  | 12 | 6  | 36   | 30 | 0 | 2 |
| 51 | 1173 | 27.31394768 | 12 | 12 | 144  | 46 | 0 | 1 |
| 52 | 3640 | 14.50000381 | 12 | 32 | 1024 | 58 | 0 | 0 |
| 53 | 340  | 16.25798988 | 12 | 15 | 225  | 37 | 0 | 8 |
| 54 | 500  | 9.50000000  | 8  | 17 | 289  | 52 | 0 | 0 |
| 55 | 1599 | 7.99995613  | 10 | 34 | 1156 | 52 | 0 | 0 |
| 56 | 1830 | 12.50002861 | 16 | 9  | 81   | 31 | 0 | 0 |
| 57 | 1920 | 14.00003242 | 14 | 37 | 1369 | 55 | 0 | 0 |
| 58 | 2052 | 20.80007362 | 17 | 10 | 100  | 34 | 0 | 0 |
| 59 | 2312 | 19.38511276 | 14 | 35 | 1225 | 55 | 0 | 0 |
| 60 | 196  | 12.38699150 | 12 | 6  | 36   | 39 | 0 | 2 |
| 61 | 2500 | 28.50000000 | 14 | 19 | 361  | 40 | 0 | 3 |
| 62 | 1980 | 15.04990864 | 12 | 10 | 100  | 43 | 0 | 4 |
| 63 | 1840 | 10.49998379 | 8  | 11 | 121  | 48 | 0 | 0 |
| 64 | 320  | 11.81000042 | 12 | 15 | 225  | 47 | 0 | 0 |
| 65 | 419  | 6.95007324  | 12 | 12 | 144  | 41 | 0 | 4 |
| 66 | 1880 | 12.41997147 | 8  | 12 | 144  | 36 | 0 | 0 |
| 67 | 72   | 17.40000343 | 17 | 14 | 196  | 46 | 0 | 2 |
| 68 | 120  | 15.49999619 | 12 | 11 | 121  | 34 | 0 | 0 |
| 69 | 1885 | 21.21704292 | 12 | 9  | 81   | 41 | 0 | 3 |
| 70 | 240  | 18.00000000 | 12 | 24 | 576  | 51 | 0 | 1 |
| 71 | 1729 | 11.89991856 | 12 | 12 | 144  | 33 | 0 | 0 |
| 72 | 1850 | 26.75195503 | 12 | 13 | 169  | 52 | 0 | 0 |
| 73 | 2033 | 12.14996147 | 9  | 29 | 841  | 58 | 0 | 0 |
| 74 | 608  | 10.19999027 | 10 | 11 | 121  | 34 | 2 | 4 |
| 75 | 1153 | 8.12001514  | 12 | 13 | 169  | 31 | 0 | 1 |
| 76 | 2208 | 10.65996456 | 12 | 19 | 361  | 48 | 0 | 1 |
| 77 | 252  | 18.10000992 | 12 | 2  | 4    | 32 | 0 | 2 |
| 78 | 337  | 8.59998608  | 17 | 24 | 576  | 49 | 0 | 0 |
| 79 | 90   | 13.66499996 | 15 | 9  | 81   | 32 | 2 | 2 |
| 80 | 1174 | 32.34996033 | 12 | 6  | 36   | 58 | 0 | 0 |
| 81 | 372  | 12.08500576 | 6  | 22 | 484  | 50 | 0 | 0 |
| 82 | 30   | 12.14999962 | 14 | 30 | 900  | 60 | 0 | 0 |
| 83 | 1800 | 17.69502068 | 12 | 10 | 100  | 50 | 0 | 1 |
| 84 | 282  | 24.70000076 | 14 | 6  | 36   | 56 | 0 | 0 |
| 85 | 720  | 2.13399196  | 9  | 29 | 841  | 51 | 0 | 0 |
| 86 | 1440 | 20.95004845 | 17 | 29 | 841  | 54 | 0 | 1 |

|     |      |             |    |    |      |    |   |   |
|-----|------|-------------|----|----|------|----|---|---|
| 87  | 2100 | 10.50008011 | 13 | 36 | 1296 | 59 | 0 | 0 |
| 88  | 1000 | 10.55000019 | 9  | 19 | 361  | 46 | 0 | 2 |
| 89  | 952  | 45.75000000 | 15 | 8  | 64   | 46 | 0 | 1 |
| 90  | 1413 | 13.63204002 | 12 | 13 | 169  | 39 | 1 | 3 |
| 91  | 2100 | 18.23893929 | 12 | 16 | 256  | 44 | 0 | 2 |
| 92  | 120  | 17.08999634 | 12 | 11 | 121  | 33 | 2 | 0 |
| 93  | 3000 | 30.23489952 | 12 | 15 | 225  | 33 | 1 | 2 |
| 94  | 1000 | 28.70000076 | 12 | 6  | 36   | 48 | 0 | 2 |
| 95  | 336  | 19.62999535 | 12 | 13 | 169  | 31 | 0 | 4 |
| 96  | 1216 | 12.82494259 | 12 | 22 | 484  | 45 | 0 | 1 |
| 97  | 988  | 23.79999924 | 12 | 24 | 576  | 45 | 0 | 1 |
| 98  | 2581 | 26.30002594 | 13 | 2  | 4    | 32 | 0 | 2 |
| 99  | 2030 | 20.69990730 | 12 | 6  | 36   | 47 | 0 | 0 |
| 100 | 413  | 26.00000381 | 13 | 2  | 4    | 34 | 0 | 2 |
| 101 | 782  | 10.87702084 | 12 | 2  | 4    | 37 | 0 | 1 |
| 102 | 1388 | 25.61206245 | 12 | 14 | 196  | 36 | 0 | 1 |
| 103 | 1450 | 20.98899460 | 12 | 9  | 81   | 47 | 1 | 2 |
| 104 | 1720 | 70.74993134 | 16 | 11 | 121  | 48 | 0 | 1 |
| 105 | 800  | 17.04999924 | 12 | 9  | 81   | 42 | 0 | 2 |
| 106 | 360  | 20.99999619 | 13 | 6  | 36   | 33 | 0 | 3 |
| 107 | 2000 | 8.11999989  | 11 | 19 | 361  | 46 | 0 | 0 |
| 108 | 1176 | 20.88599014 | 12 | 26 | 676  | 47 | 0 | 3 |
| 109 | 2058 | 17.66891861 | 12 | 19 | 361  | 44 | 0 | 1 |
| 110 | 900  | 25.20002937 | 12 | 3  | 9    | 36 | 0 | 4 |
| 111 | 215  | 14.24500561 | 17 | 7  | 49   | 31 | 2 | 0 |
| 112 | 2000 | 14.30000019 | 14 | 28 | 784  | 55 | 0 | 0 |
| 113 | 757  | 23.70001030 | 16 | 13 | 169  | 45 | 0 | 1 |
| 114 | 1264 | 45.99999619 | 17 | 9  | 81   | 47 | 0 | 0 |
| 115 | 2064 | 42.99990463 | 12 | 15 | 225  | 46 | 0 | 3 |
| 116 | 1280 | 14.74899960 | 11 | 20 | 400  | 49 | 0 | 0 |
| 117 | 1715 | 16.15005493 | 12 | 29 | 841  | 49 | 0 | 0 |
| 118 | 2000 | 17.77400017 | 12 | 9  | 81   | 45 | 0 | 2 |
| 119 | 12   | 91.00000000 | 17 | 1  | 1    | 38 | 1 | 3 |
| 120 | 1528 | 22.29993439 | 10 | 8  | 64   | 47 | 0 | 0 |
| 121 | 561  | 34.60001373 | 13 | 19 | 361  | 54 | 0 | 3 |
| 122 | 2058 | 9.62000179  | 11 | 23 | 529  | 41 | 0 | 0 |
| 123 | 1823 | 10.89994621 | 12 | 3  | 9    | 43 | 0 | 2 |
| 124 | 1680 | 14.49994373 | 16 | 13 | 169  | 31 | 1 | 1 |
| 125 | 1440 | 22.00001526 | 17 | 8  | 64   | 47 | 0 | 0 |
| 126 | 4950 | 17.90007973 | 12 | 17 | 289  | 35 | 0 | 2 |
| 127 | 1176 | 23.67506218 | 16 | 4  | 16   | 45 | 0 | 3 |
| 128 | 1100 | 11.79996014 | 12 | 15 | 225  | 33 | 1 | 0 |
| 129 | 1516 | 16.14195442 | 16 | 11 | 121  | 54 | 0 | 1 |

|     |      |             |    |    |      |    |   |   |
|-----|------|-------------|----|----|------|----|---|---|
| 130 | 900  | 18.39997101 | 8  | 7  | 49   | 35 | 0 | 4 |
| 131 | 1080 | 15.49994755 | 12 | 0  | 0    | 31 | 1 | 2 |
| 132 | 480  | 17.32399940 | 12 | 0  | 0    | 55 | 0 | 0 |
| 133 | 288  | 19.20500374 | 12 | 10 | 100  | 34 | 0 | 2 |
| 134 | 1875 | 21.30006218 | 13 | 8  | 64   | 38 | 0 | 1 |
| 135 | 630  | 23.55999565 | 11 | 2  | 4    | 45 | 0 | 1 |
| 136 | 234  | 20.85000038 | 12 | 4  | 16   | 47 | 0 | 1 |
| 137 | 1600 | 26.14999962 | 12 | 6  | 36   | 39 | 0 | 2 |
| 138 | 960  | 17.00000000 | 14 | 18 | 324  | 36 | 1 | 0 |
| 139 | 120  | 20.72000313 | 12 | 3  | 9    | 33 | 1 | 2 |
| 140 | 2025 | 17.00008965 | 12 | 22 | 484  | 50 | 0 | 0 |
| 141 | 1809 | 15.99999809 | 12 | 33 | 1089 | 58 | 0 | 0 |
| 142 | 3087 | 19.50004959 | 17 | 28 | 784  | 49 | 0 | 0 |
| 143 | 910  | 12.00000381 | 14 | 23 | 529  | 41 | 0 | 2 |
| 144 | 1840 | 13.73191166 | 12 | 27 | 729  | 51 | 0 | 1 |
| 145 | 784  | 27.19999123 | 9  | 11 | 121  | 53 | 0 | 0 |
| 146 | 400  | 5.31500006  | 12 | 6  | 36   | 36 | 1 | 2 |
| 147 | 1000 | 16.00000000 | 12 | 11 | 121  | 46 | 0 | 2 |
| 148 | 1904 | 27.87198257 | 12 | 14 | 196  | 36 | 0 | 2 |
| 149 | 1771 | 40.00001144 | 14 | 17 | 289  | 53 | 0 | 1 |
| 150 | 1486 | 15.90003395 | 16 | 17 | 289  | 40 | 0 | 3 |
| 151 | 740  | 27.49996948 | 17 | 14 | 196  | 42 | 0 | 2 |
| 152 | 1820 | 17.02005005 | 15 | 11 | 121  | 33 | 1 | 1 |
| 153 | 1275 | 22.39493942 | 12 | 7  | 49   | 43 | 0 | 3 |
| 154 | 450  | 11.10000038 | 16 | 8  | 64   | 31 | 1 | 0 |
| 155 | 1221 | 32.70001221 | 17 | 6  | 36   | 47 | 0 | 0 |
| 156 | 1550 | 27.79996109 | 17 | 8  | 64   | 54 | 0 | 0 |
| 157 | 180  | 2.19999409  | 12 | 4  | 16   | 33 | 1 | 3 |
| 158 | 2090 | 19.72095108 | 16 | 25 | 625  | 43 | 0 | 0 |
| 159 | 1960 | 9.99998760  | 13 | 24 | 576  | 46 | 0 | 1 |
| 160 | 1440 | 13.19996834 | 12 | 11 | 121  | 35 | 0 | 3 |
| 161 | 794  | 12.70897484 | 11 | 19 | 361  | 37 | 0 | 3 |
| 162 | 993  | 27.30004692 | 16 | 9  | 81   | 37 | 0 | 2 |
| 163 | 160  | 21.20000076 | 14 | 19 | 361  | 34 | 0 | 3 |
| 164 | 105  | 14.40000439 | 16 | 14 | 196  | 43 | 1 | 0 |
| 165 | 1200 | 20.57596016 | 12 | 22 | 484  | 46 | 0 | 0 |
| 166 | 450  | 12.49999046 | 9  | 6  | 36   | 35 | 0 | 3 |
| 167 | 996  | 17.50021553 | 17 | 23 | 529  | 46 | 0 | 0 |
| 168 | 1052 | 44.00003815 | 14 | 15 | 225  | 46 | 0 | 0 |
| 169 | 1128 | 13.11895466 | 12 | 6  | 36   | 43 | 0 | 2 |
| 170 | 1840 | 14.00005627 | 12 | 11 | 121  | 30 | 0 | 0 |
| 171 | 1910 | 9.64508629  | 11 | 2  | 4    | 41 | 0 | 2 |
| 172 | 980  | 17.39704514 | 12 | 22 | 484  | 54 | 0 | 1 |



|     |      |             |    |    |     |    |   |   |
|-----|------|-------------|----|----|-----|----|---|---|
| 173 | 2317 | 7.79988861  | 12 | 10 | 100 | 31 | 0 | 1 |
| 174 | 1089 | 13.13397694 | 10 | 14 | 196 | 44 | 0 | 0 |
| 175 | 800  | 25.60000038 | 12 | 12 | 144 | 32 | 0 | 1 |
| 176 | 1230 | 13.90002537 | 5  | 9  | 81  | 47 | 0 | 0 |
| 177 | 1158 | 19.29794312 | 17 | 13 | 169 | 46 | 0 | 1 |
| 178 | 2272 | 9.20001602  | 11 | 18 | 324 | 37 | 0 | 0 |
| 179 | 528  | 37.99998856 | 12 | 8  | 64  | 51 | 0 | 2 |
| 180 | 1000 | 44.00000000 | 12 | 11 | 121 | 49 | 0 | 1 |
| 181 | 520  | 21.37202454 | 14 | 9  | 81  | 36 | 0 | 4 |
| 182 | 760  | 23.66802025 | 11 | 9  | 81  | 39 | 0 | 1 |
| 183 | 1920 | 9.00000000  | 12 | 14 | 196 | 48 | 0 | 2 |
| 184 | 1220 | 25.19995117 | 14 | 9  | 81  | 38 | 0 | 2 |
| 185 | 200  | 21.21999931 | 12 | 2  | 4   | 40 | 0 | 2 |
| 186 | 2480 | 33.96991348 | 10 | 12 | 144 | 39 | 1 | 5 |
| 187 | 2750 | 17.06999969 | 16 | 15 | 225 | 37 | 0 | 0 |
| 188 | 2014 | 6.01602364  | 13 | 11 | 121 | 49 | 0 | 1 |
| 189 | 1355 | 17.10000992 | 12 | 7  | 49  | 33 | 0 | 3 |
| 190 | 80   | 8.23700047  | 12 | 9  | 81  | 30 | 0 | 0 |
| 191 | 1670 | 13.30008221 | 12 | 19 | 361 | 54 | 0 | 0 |
| 192 | 520  | 16.00002098 | 11 | 11 | 121 | 39 | 0 | 4 |
| 193 | 288  | 12.53999043 | 12 | 8  | 64  | 43 | 0 | 3 |
| 194 | 2014 | 18.00003815 | 9  | 13 | 169 | 31 | 0 | 3 |
| 195 | 800  | 31.20000076 | 13 | 4  | 16  | 33 | 0 | 3 |
| 196 | 1984 | 20.74991035 | 12 | 7  | 49  | 40 | 0 | 3 |
| 197 | 1823 | 11.09992027 | 12 | 19 | 361 | 36 | 0 | 1 |
| 198 | 1500 | 20.68000031 | 12 | 14 | 196 | 51 | 0 | 0 |
| 199 | 2261 | 18.00000954 | 13 | 14 | 196 | 44 | 0 | 1 |
| 200 | 1728 | 32.43006516 | 16 | 3  | 9   | 42 | 0 | 3 |
| 201 | 1960 | 32.90003204 | 12 | 9  | 81  | 40 | 0 | 1 |
| 202 | 1578 | 24.10000610 | 16 | 7  | 49  | 34 | 1 | 1 |
| 203 | 1316 | 17.80039215 | 17 | 7  | 49  | 30 | 0 | 0 |
| 204 | 1530 | 20.50001717 | 12 | 14 | 196 | 54 | 0 | 0 |
| 205 | 2220 | 10.49989796 | 12 | 29 | 841 | 51 | 0 | 0 |
| 206 | 1336 | 10.43703461 | 9  | 19 | 361 | 44 | 0 | 2 |
| 207 | 1008 | 18.19499016 | 12 | 14 | 196 | 43 | 0 | 1 |
| 208 | 1944 | 12.84507656 | 12 | 16 | 256 | 34 | 0 | 1 |
| 209 | 2000 | 13.80000019 | 13 | 10 | 100 | 45 | 0 | 0 |
| 210 | 258  | 22.19999504 | 12 | 12 | 144 | 39 | 0 | 0 |
| 211 | 1785 | 6.69994116  | 12 | 24 | 576 | 50 | 0 | 0 |
| 212 | 480  | 6.25001574  | 12 | 6  | 36  | 52 | 0 | 0 |
| 213 | 772  | 15.60000801 | 12 | 9  | 81  | 41 | 0 | 2 |
| 214 | 900  | 3.30000997  | 10 | 14 | 196 | 59 | 0 | 0 |
| 215 | 1428 | 3.67097759  | 12 | 26 | 676 | 52 | 0 | 0 |

|     |      |             |    |    |     |    |   |   |
|-----|------|-------------|----|----|-----|----|---|---|
| 216 | 210  | 7.78999710  | 16 | 7  | 49  | 46 | 0 | 0 |
| 217 | 239  | 18.27198982 | 12 | 4  | 16  | 41 | 1 | 5 |
| 218 | 1878 | 10.95397949 | 11 | 15 | 225 | 33 | 0 | 2 |
| 219 | 215  | 13.49999237 | 12 | 23 | 529 | 45 | 0 | 0 |
| 220 | 2340 | 11.20001221 | 10 | 1  | 1   | 36 | 1 | 2 |
| 221 | 1960 | 20.99990845 | 12 | 29 | 841 | 48 | 0 | 1 |
| 222 | 532  | 25.69999886 | 12 | 9  | 81  | 47 | 0 | 1 |
| 223 | 394  | 8.93299389  | 12 | 6  | 36  | 45 | 0 | 0 |
| 224 | 675  | 19.15997696 | 12 | 11 | 121 | 37 | 0 | 2 |
| 225 | 1515 | 26.58998680 | 16 | 17 | 289 | 46 | 0 | 4 |
| 226 | 1030 | 22.40000534 | 17 | 6  | 36  | 43 | 0 | 3 |
| 227 | 1250 | 20.63299942 | 12 | 7  | 49  | 42 | 0 | 2 |
| 228 | 1158 | 28.20000648 | 17 | 2  | 4   | 34 | 1 | 2 |
| 229 | 112  | 28.79999924 | 12 | 24 | 576 | 52 | 0 | 0 |
| 230 | 336  | 8.99999714  | 12 | 4  | 16  | 37 | 0 | 3 |
| 231 | 1984 | 11.39994240 | 12 | 11 | 121 | 37 | 0 | 1 |
| 232 | 716  | 10.40001392 | 8  | 25 | 625 | 52 | 0 | 0 |
| 233 | 1410 | 19.08005524 | 12 | 11 | 121 | 30 | 1 | 0 |
| 234 | 1300 | 9.46603966  | 13 | 2  | 4   | 31 | 0 | 1 |
| 235 | 1640 | 6.50006008  | 12 | 19 | 361 | 38 | 0 | 1 |
| 236 | 1202 | 29.11701393 | 12 | 7  | 49  | 43 | 0 | 3 |
| 237 | 489  | 19.10301971 | 8  | 2  | 4   | 49 | 0 | 1 |
| 238 | 2076 | 16.34997177 | 12 | 20 | 400 | 55 | 0 | 0 |
| 239 | 526  | 32.02501678 | 17 | 10 | 100 | 38 | 0 | 2 |
| 240 | 1721 | 16.70006180 | 17 | 19 | 361 | 52 | 0 | 0 |
| 241 | 1327 | 4.81103754  | 12 | 17 | 289 | 48 | 0 | 0 |
| 242 | 584  | 24.62600899 | 13 | 12 | 144 | 32 | 0 | 2 |
| 243 | 1376 | 17.40001297 | 12 | 11 | 121 | 32 | 0 | 1 |
| 244 | 1040 | 13.02503967 | 12 | 6  | 36  | 38 | 0 | 2 |
| 245 | 548  | 19.00698280 | 12 | 10 | 100 | 46 | 0 | 3 |
| 246 | 15   | 14.02999973 | 12 | 4  | 16  | 40 | 0 | 3 |
| 247 | 1980 | 14.89990616 | 9  | 2  | 4   | 31 | 0 | 4 |
| 248 | 1520 | 25.00005531 | 10 | 13 | 169 | 43 | 0 | 1 |
| 249 | 1880 | 10.70006752 | 12 | 21 | 441 | 51 | 0 | 0 |
| 250 | 1260 | 24.25000381 | 16 | 9  | 81  | 30 | 1 | 0 |
| 251 | 1092 | 39.13996506 | 13 | 4  | 16  | 52 | 0 | 0 |
| 252 | 1587 | 7.19997311  | 8  | 2  | 4   | 30 | 1 | 5 |
| 253 | 156  | 31.81099892 | 16 | 19 | 361 | 51 | 0 | 0 |
| 254 | 1939 | 10.00004768 | 13 | 4  | 16  | 31 | 0 | 2 |
| 255 | 1250 | 20.65999985 | 12 | 9  | 81  | 34 | 0 | 4 |
| 256 | 610  | 13.49997616 | 11 | 14 | 196 | 49 | 0 | 0 |
| 257 | 270  | 25.37999535 | 13 | 6  | 36  | 35 | 1 | 3 |
| 258 | 660  | 18.27497673 | 12 | 24 | 576 | 53 | 1 | 0 |

|     |      |             |    |    |      |    |   |   |
|-----|------|-------------|----|----|------|----|---|---|
| 259 | 1000 | 39.21300125 | 12 | 1  | 1    | 32 | 0 | 3 |
| 260 | 1920 | 10.49993610 | 10 | 13 | 169  | 38 | 0 | 3 |
| 261 | 200  | 34.85699844 | 12 | 3  | 9    | 54 | 0 | 0 |
| 262 | 1500 | 28.50199890 | 17 | 10 | 100  | 47 | 0 | 1 |
| 263 | 868  | 12.99995995 | 15 | 16 | 256  | 45 | 0 | 1 |
| 264 | 2318 | 41.39990997 | 16 | 9  | 81   | 47 | 0 | 1 |
| 265 | 2000 | 14.77999973 | 10 | 19 | 361  | 59 | 0 | 0 |
| 266 | 60   | 15.04999828 | 11 | 4  | 16   | 32 | 0 | 1 |
| 267 | 1715 | 29.69997787 | 12 | 10 | 100  | 45 | 0 | 1 |
| 268 | 550  | 16.16501999 | 12 | 5  | 25   | 40 | 0 | 4 |
| 269 | 1960 | 25.20515823 | 14 | 7  | 49   | 47 | 0 | 2 |
| 270 | 44   | 14.19999886 | 16 | 3  | 9    | 36 | 1 | 2 |
| 271 | 1920 | 18.15896797 | 14 | 38 | 1444 | 56 | 0 | 0 |
| 272 | 2540 | 28.98106384 | 8  | 16 | 256  | 41 | 0 | 1 |
| 273 | 156  | 13.39200306 | 7  | 13 | 169  | 48 | 0 | 3 |
| 274 | 780  | 9.17502022  | 12 | 1  | 1    | 36 | 1 | 2 |
| 275 | 3120 | 27.03984833 | 12 | 7  | 49   | 41 | 0 | 0 |
| 276 | 2040 | 13.14995193 | 14 | 15 | 225  | 41 | 0 | 0 |
| 277 | 1610 | 16.40007019 | 12 | 10 | 100  | 36 | 0 | 3 |
| 278 | 215  | 21.29999161 | 12 | 2  | 4    | 37 | 0 | 3 |
| 279 | 1120 | 17.20101547 | 12 | 19 | 361  | 38 | 0 | 0 |
| 280 | 846  | 8.56002617  | 14 | 25 | 625  | 43 | 0 | 2 |
| 281 | 3225 | 6.49083996  | 16 | 25 | 625  | 54 | 0 | 0 |
| 282 | 1376 | 12.49996758 | 12 | 7  | 49   | 38 | 0 | 1 |
| 283 | 980  | 27.00002480 | 12 | 15 | 225  | 30 | 1 | 0 |
| 284 | 1838 | 53.50004959 | 12 | 11 | 121  | 49 | 0 | 0 |
| 285 | 1494 | 52.49994659 | 13 | 25 | 625  | 45 | 0 | 1 |
| 286 | 450  | 38.39997864 | 13 | 19 | 361  | 51 | 0 | 0 |
| 287 | 1976 | 13.89194489 | 10 | 4  | 16   | 34 | 0 | 0 |
| 288 | 2012 | 3.89999294  | 12 | 14 | 196  | 34 | 0 | 2 |
| 289 | 561  | 34.19999695 | 12 | 19 | 361  | 41 | 0 | 1 |
| 290 | 1715 | 19.70007896 | 12 | 18 | 324  | 49 | 0 | 1 |
| 291 | 1912 | 18.49995232 | 12 | 14 | 196  | 32 | 0 | 0 |
| 292 | 3686 | 10.99997616 | 14 | 11 | 121  | 32 | 0 | 0 |
| 293 | 1080 | 43.30001068 | 17 | 4  | 16   | 32 | 0 | 2 |
| 294 | 1799 | 18.76000786 | 10 | 29 | 841  | 47 | 0 | 0 |
| 295 | 1984 | 4.80009604  | 9  | 21 | 441  | 39 | 0 | 1 |
| 296 | 1839 | 21.50000191 | 12 | 24 | 576  | 49 | 0 | 0 |
| 297 | 1579 | 28.03993797 | 12 | 19 | 361  | 37 | 0 | 3 |
| 298 | 96   | 26.00000381 | 16 | 31 | 961  | 59 | 0 | 0 |
| 299 | 1920 | 27.00000000 | 12 | 28 | 784  | 50 | 0 | 0 |
| 300 | 1688 | 17.79968834 | 17 | 15 | 225  | 32 | 0 | 1 |
| 301 | 1589 | 17.40194511 | 12 | 27 | 729  | 46 | 0 | 0 |

|     |      |             |    |    |      |    |   |   |
|-----|------|-------------|----|----|------|----|---|---|
| 302 | 345  | 19.30999184 | 17 | 13 | 169  | 43 | 0 | 2 |
| 303 | 1521 | 9.99997997  | 11 | 4  | 16   | 37 | 0 | 3 |
| 304 | 1490 | 11.17998028 | 16 | 10 | 100  | 32 | 0 | 2 |
| 305 | 989  | 18.85695648 | 11 | 8  | 64   | 39 | 0 | 1 |
| 306 | 600  | 12.30002022 | 13 | 4  | 16   | 34 | 0 | 2 |
| 307 | 2646 | 13.67711830 | 11 | 18 | 324  | 39 | 0 | 1 |
| 308 | 2149 | 9.55999660  | 8  | 3  | 9    | 45 | 0 | 3 |
| 309 | 320  | 24.49998474 | 11 | 11 | 121  | 50 | 0 | 0 |
| 310 | 1600 | 23.14999962 | 12 | 8  | 64   | 40 | 0 | 1 |
| 311 | 2419 | 15.59088326 | 10 | 10 | 100  | 30 | 0 | 1 |
| 312 | 2005 | 14.42092419 | 17 | 33 | 1089 | 57 | 0 | 0 |
| 313 | 1960 | 17.45490837 | 12 | 19 | 361  | 39 | 0 | 1 |
| 314 | 2147 | 9.80001926  | 12 | 35 | 1225 | 53 | 0 | 0 |
| 315 | 1207 | 17.57446480 | 17 | 21 | 441  | 48 | 0 | 1 |
| 316 | 2000 | 16.55500031 | 14 | 7  | 49   | 46 | 0 | 1 |
| 317 | 1260 | 13.29497433 | 12 | 18 | 324  | 47 | 0 | 0 |
| 318 | 90   | 11.84400272 | 12 | 4  | 16   | 43 | 0 | 1 |
| 319 | 1800 | 46.64506149 | 12 | 12 | 144  | 47 | 0 | 0 |
| 320 | 573  | 14.69998932 | 12 | 16 | 256  | 47 | 0 | 1 |
| 321 | 1825 | 26.09008026 | 12 | 14 | 196  | 47 | 0 | 0 |
| 322 | 75   | 9.89999962  | 12 | 3  | 9    | 46 | 0 | 0 |
| 323 | 1348 | 9.04802608  | 9  | 1  | 1    | 34 | 0 | 4 |
| 324 | 1880 | 30.75006485 | 10 | 27 | 729  | 48 | 0 | 0 |
| 325 | 1240 | 8.49993992  | 12 | 12 | 144  | 30 | 0 | 1 |
| 326 | 848  | 22.24999237 | 12 | 6  | 36   | 51 | 0 | 1 |
| 327 | 150  | 42.90999985 | 12 | 9  | 81   | 52 | 0 | 5 |
| 328 | 2000 | 33.29999924 | 12 | 2  | 4    | 37 | 0 | 2 |
| 329 | 1952 | 13.81990337 | 12 | 6  | 36   | 32 | 0 | 2 |
| 330 | 1456 | 23.60000801 | 17 | 9  | 81   | 36 | 0 | 2 |
| 331 | 1740 | 13.00006771 | 12 | 16 | 256  | 35 | 0 | 2 |
| 332 | 1400 | 20.74994087 | 17 | 22 | 484  | 45 | 0 | 0 |
| 333 | 2000 | 6.30000019  | 12 | 26 | 676  | 56 | 0 | 0 |
| 334 | 1750 | 7.78892469  | 10 | 11 | 121  | 40 | 0 | 2 |
| 335 | 1101 | 10.47004032 | 12 | 11 | 121  | 45 | 1 | 2 |
| 336 | 2000 | 12.00000000 | 12 | 15 | 225  | 32 | 0 | 2 |
| 337 | 1877 | 16.97991562 | 12 | 13 | 169  | 45 | 0 | 0 |
| 338 | 160  | 17.89999962 | 12 | 6  | 36   | 40 | 0 | 2 |
| 339 | 1886 | 15.53993702 | 12 | 20 | 400  | 38 | 0 | 1 |
| 340 | 1446 | 9.88398552  | 12 | 17 | 289  | 49 | 0 | 4 |
| 341 | 1500 | 28.59995079 | 16 | 8  | 64   | 47 | 0 | 1 |
| 342 | 860  | 17.66001129 | 13 | 13 | 169  | 52 | 0 | 0 |
| 343 | 1848 | 25.99991798 | 13 | 15 | 225  | 34 | 0 | 1 |
| 344 | 1678 | 13.60200977 | 12 | 14 | 196  | 44 | 0 | 2 |

|     |      |             |    |    |     |    |   |   |
|-----|------|-------------|----|----|-----|----|---|---|
| 345 | 160  | 15.80000019 | 16 | 14 | 196 | 36 | 0 | 3 |
| 346 | 108  | 41.09999466 | 17 | 6  | 36  | 50 | 0 | 0 |
| 347 | 1738 | 10.77504158 | 12 | 24 | 576 | 45 | 0 | 0 |
| 348 | 1170 | 9.00004673  | 14 | 10 | 100 | 44 | 0 | 2 |
| 349 | 15   | 24.39899445 | 12 | 2  | 4   | 57 | 0 | 2 |
| 350 | 2088 | 37.30009079 | 17 | 9  | 81  | 35 | 0 | 0 |
| 351 | 2490 | 27.99994850 | 12 | 23 | 529 | 46 | 0 | 0 |
| 352 | 135  | 13.70000267 | 14 | 12 | 144 | 30 | 2 | 1 |
| 353 | 1944 | 17.20994377 | 12 | 8  | 64  | 42 | 0 | 3 |
| 354 | 690  | 14.00001431 | 12 | 16 | 256 | 34 | 0 | 1 |
| 355 | 608  | 35.75502014 | 17 | 10 | 100 | 45 | 0 | 2 |
| 356 | 63   | 23.49999619 | 16 | 7  | 49  | 35 | 1 | 2 |
| 357 | 154  | 31.99993324 | 16 | 19 | 361 | 40 | 0 | 0 |
| 358 | 420  | 17.14999580 | 12 | 2  | 4   | 32 | 0 | 1 |
| 359 | 651  | 20.25002480 | 9  | 9  | 81  | 54 | 0 | 0 |
| 360 | 675  | 5.48598480  | 12 | 14 | 196 | 38 | 0 | 3 |
| 361 | 1663 | 25.07504082 | 12 | 9  | 81  | 43 | 0 | 3 |
| 362 | 1680 | 18.21995163 | 16 | 16 | 256 | 54 | 0 | 0 |
| 363 | 180  | 25.99999619 | 14 | 7  | 49  | 39 | 0 | 3 |
| 364 | 1581 | 34.50007248 | 12 | 6  | 36  | 37 | 0 | 1 |
| 365 | 1200 | 12.39999962 | 12 | 22 | 484 | 46 | 0 | 2 |
| 366 | 450  | 10.78684998 | 11 | 9  | 81  | 56 | 0 | 0 |
| 367 | 547  | 16.32300758 | 12 | 9  | 81  | 41 | 0 | 3 |
| 368 | 300  | 30.50000000 | 16 | 14 | 196 | 45 | 0 | 1 |
| 369 | 975  | 51.29962540 | 17 | 17 | 289 | 44 | 0 | 1 |
| 370 | 1621 | 33.04997253 | 17 | 12 | 144 | 50 | 0 | 1 |
| 371 | 300  | 34.75001144 | 14 | 13 | 169 | 37 | 0 | 5 |
| 372 | 1868 | 16.40003967 | 12 | 8  | 64  | 44 | 0 | 1 |
| 373 | 1803 | 19.70007324 | 14 | 10 | 100 | 32 | 0 | 2 |
| 374 | 2143 | 6.60000277  | 12 | 16 | 256 | 34 | 1 | 1 |
| 375 | 1080 | 9.02000809  | 10 | 1  | 1   | 32 | 0 | 2 |
| 376 | 1352 | 10.40000820 | 12 | 6  | 36  | 37 | 0 | 3 |
| 377 | 537  | 14.51998806 | 13 | 4  | 16  | 44 | 0 | 1 |
| 378 | 352  | 17.19999695 | 16 | 8  | 64  | 34 | 0 | 2 |
| 379 | 200  | 43.00000000 | 12 | 4  | 16  | 33 | 1 | 3 |
| 380 | 2045 | 13.87195969 | 7  | 15 | 225 | 43 | 0 | 3 |
| 381 | 1253 | -0.02905745 | 16 | 7  | 49  | 35 | 0 | 2 |
| 382 | 1960 | 16.76994324 | 14 | 14 | 196 | 43 | 0 | 1 |
| 383 | 2000 | 7.79999971  | 12 | 16 | 256 | 34 | 0 | 0 |
| 384 | 1960 | 14.50006390 | 10 | 15 | 225 | 36 | 0 | 3 |
| 385 | 2000 | 7.90000010  | 12 | 23 | 529 | 41 | 0 | 2 |
| 386 | 1568 | 79.80001068 | 16 | 19 | 361 | 41 | 0 | 0 |
| 387 | 1225 | 7.17597008  | 10 | 4  | 16  | 35 | 0 | 3 |

|     |      |             |    |    |      |    |   |   |
|-----|------|-------------|----|----|------|----|---|---|
| 388 | 780  | 17.50698280 | 12 | 12 | 144  | 32 | 1 | 3 |
| 389 | 480  | 20.60000038 | 14 | 12 | 144  | 30 | 0 | 0 |
| 390 | 1923 | 18.55991554 | 12 | 25 | 625  | 43 | 0 | 0 |
| 391 | 2000 | 9.30000019  | 6  | 14 | 196  | 54 | 0 | 0 |
| 392 | 2110 | 5.12000751  | 15 | 14 | 196  | 35 | 0 | 2 |
| 393 | 1664 | 14.50003815 | 12 | 11 | 121  | 50 | 0 | 0 |
| 394 | 48   | 19.79999924 | 17 | 7  | 49   | 34 | 1 | 1 |
| 395 | 1791 | 18.29994965 | 14 | 18 | 324  | 52 | 0 | 0 |
| 396 | 1404 | 33.99993515 | 13 | 4  | 16   | 35 | 0 | 3 |
| 397 | 1920 | 11.62793636 | 6  | 37 | 1369 | 55 | 0 | 0 |
| 398 | 2141 | 11.80004597 | 16 | 13 | 169  | 35 | 0 | 0 |
| 399 | 1720 | 39.09997559 | 14 | 14 | 196  | 49 | 0 | 1 |
| 400 | 3533 | 18.43007088 | 15 | 17 | 289  | 38 | 2 | 2 |
| 401 | 2000 | 21.00000000 | 14 | 5  | 25   | 42 | 0 | 2 |
| 402 | 800  | 59.00000000 | 8  | 2  | 4    | 48 | 0 | 1 |
| 403 | 3000 | 25.29999924 | 14 | 0  | 0    | 51 | 0 | 0 |
| 404 | 293  | 23.24899101 | 12 | 3  | 9    | 43 | 0 | 2 |
| 405 | 1872 | 24.92808723 | 12 | 21 | 441  | 43 | 0 | 1 |
| 406 | 2058 | 14.78198814 | 12 | 20 | 400  | 38 | 0 | 1 |
| 407 | 1832 | 18.90002823 | 12 | 19 | 361  | 44 | 0 | 1 |
| 408 | 120  | 21.00000000 | 12 | 4  | 16   | 36 | 1 | 3 |
| 409 | 1632 | 10.00000954 | 12 | 19 | 361  | 38 | 0 | 0 |
| 410 | 778  | 29.30997467 | 8  | 11 | 121  | 47 | 0 | 0 |
| 411 | 1984 | 13.14003181 | 12 | 14 | 196  | 34 | 0 | 2 |
| 412 | 225  | 25.08999443 | 17 | 8  | 64   | 40 | 1 | 2 |
| 413 | 1960 | 14.59993172 | 12 | 13 | 169  | 31 | 0 | 1 |
| 414 | 444  | 1.20000124  | 12 | 24 | 576  | 46 | 0 | 0 |
| 415 | 384  | 32.00000381 | 14 | 1  | 1    | 36 | 0 | 3 |
| 416 | 1170 | 16.11997032 | 13 | 1  | 1    | 39 | 1 | 2 |
| 417 | 1330 | 26.50002289 | 17 | 3  | 9    | 36 | 0 | 2 |
| 418 | 1350 | 12.75005531 | 8  | 4  | 16   | 37 | 0 | 4 |
| 419 | 480  | 12.89999962 | 12 | 21 | 441  | 39 | 0 | 4 |
| 420 | 1984 | 10.69997501 | 11 | 10 | 100  | 36 | 1 | 3 |
| 421 | 1944 | 14.43403149 | 12 | 13 | 169  | 49 | 0 | 2 |
| 422 | 50   | 23.70899963 | 12 | 9  | 81   | 45 | 1 | 1 |
| 423 | 460  | 15.10000420 | 17 | 14 | 196  | 32 | 2 | 0 |
| 424 | 680  | 18.19997597 | 10 | 2  | 4    | 36 | 0 | 5 |
| 425 | 2450 | 22.64105606 | 12 | 21 | 441  | 40 | 0 | 1 |
| 426 | 2144 | 21.64007950 | 13 | 22 | 484  | 43 | 0 | 2 |
| 427 | 1760 | 23.99998474 | 12 | 14 | 196  | 33 | 0 | 1 |
| 428 | 490  | 16.00001526 | 12 | 7  | 49   | 30 | 0 | 1 |
| 429 | 0    | 21.02499962 | 12 | 2  | 4    | 49 | 0 | 1 |
| 430 | 0    | 23.60000038 | 16 | 5  | 25   | 30 | 2 | 0 |

|     |   |             |    |    |     |    |   |   |
|-----|---|-------------|----|----|-----|----|---|---|
| 431 | 0 | 22.79999924 | 12 | 12 | 144 | 30 | 1 | 0 |
| 432 | 0 | 35.90999985 | 12 | 1  | 1   | 41 | 0 | 4 |
| 433 | 0 | 21.70000076 | 12 | 12 | 144 | 45 | 0 | 1 |
| 434 | 0 | 21.82299995 | 12 | 4  | 16  | 43 | 0 | 5 |
| 435 | 0 | 31.00000000 | 13 | 9  | 81  | 42 | 0 | 1 |
| 436 | 0 | 15.30000019 | 12 | 9  | 81  | 60 | 0 | 0 |
| 437 | 0 | 12.92500019 | 12 | 6  | 36  | 57 | 0 | 0 |
| 438 | 0 | 15.82999992 | 10 | 5  | 25  | 38 | 0 | 2 |
| 439 | 0 | 30.20000076 | 12 | 5  | 25  | 56 | 0 | 0 |
| 440 | 0 | 16.60000038 | 12 | 8  | 64  | 32 | 0 | 3 |
| 441 | 0 | 11.00000000 | 7  | 2  | 4   | 49 | 0 | 1 |
| 442 | 0 | 15.00000000 | 12 | 6  | 36  | 55 | 0 | 0 |
| 443 | 0 | 20.52799988 | 9  | 0  | 0   | 36 | 1 | 1 |
| 444 | 0 | 13.12600040 | 12 | 3  | 9   | 44 | 0 | 3 |
| 445 | 0 | 15.55000019 | 10 | 7  | 49  | 44 | 0 | 1 |
| 446 | 0 | 18.01000023 | 14 | 3  | 9   | 35 | 1 | 2 |
| 447 | 0 | 18.87400055 | 14 | 10 | 100 | 44 | 2 | 3 |
| 448 | 0 | 24.79999924 | 12 | 3  | 9   | 45 | 0 | 1 |
| 449 | 0 | 17.50000000 | 12 | 2  | 4   | 34 | 1 | 0 |
| 450 | 0 | 16.14999962 | 17 | 12 | 144 | 30 | 2 | 0 |
| 451 | 0 | 15.18900013 | 8  | 15 | 225 | 39 | 0 | 1 |
| 452 | 0 | 6.00000000  | 12 | 5  | 25  | 36 | 0 | 2 |
| 453 | 0 | 37.25000000 | 17 | 4  | 16  | 38 | 0 | 2 |
| 454 | 0 | 27.76000023 | 12 | 10 | 100 | 53 | 0 | 0 |
| 455 | 0 | 9.09000015  | 12 | 1  | 1   | 36 | 0 | 2 |
| 456 | 0 | 14.50000000 | 12 | 8  | 64  | 32 | 1 | 1 |
| 457 | 0 | 19.70000076 | 9  | 20 | 400 | 51 | 0 | 3 |
| 458 | 0 | 16.78800011 | 11 | 4  | 16  | 38 | 0 | 0 |
| 459 | 0 | 18.52000046 | 12 | 7  | 49  | 33 | 2 | 0 |
| 460 | 0 | 20.95000076 | 12 | 10 | 100 | 54 | 0 | 0 |
| 461 | 0 | 7.57399988  | 9  | 3  | 9   | 38 | 0 | 3 |
| 462 | 0 | 10.02700043 | 11 | 5  | 25  | 30 | 2 | 2 |
| 463 | 0 | 5.00000000  | 12 | 10 | 100 | 34 | 2 | 3 |
| 464 | 0 | 7.03999996  | 9  | 0  | 0   | 34 | 0 | 1 |
| 465 | 0 | 40.79999924 | 12 | 3  | 9   | 50 | 0 | 2 |
| 466 | 0 | 16.04999924 | 17 | 10 | 100 | 30 | 2 | 0 |
| 467 | 0 | 33.09999847 | 12 | 2  | 4   | 38 | 0 | 2 |
| 468 | 0 | 33.85599899 | 14 | 10 | 100 | 54 | 0 | 0 |
| 469 | 0 | 20.50000000 | 12 | 4  | 16  | 30 | 1 | 2 |
| 470 | 0 | 28.60000038 | 12 | 0  | 0   | 55 | 0 | 0 |
| 471 | 0 | 18.75000000 | 10 | 10 | 100 | 51 | 0 | 1 |
| 472 | 0 | 20.29999924 | 12 | 5  | 25  | 44 | 0 | 1 |
| 473 | 0 | 13.42000008 | 12 | 0  | 0   | 53 | 0 | 0 |

|     |   |             |    |    |     |    |   |   |
|-----|---|-------------|----|----|-----|----|---|---|
| 474 | 0 | 18.39999962 | 10 | 0  | 0   | 42 | 0 | 2 |
| 475 | 0 | 16.68199921 | 12 | 19 | 361 | 38 | 0 | 2 |
| 476 | 0 | 32.68500137 | 13 | 2  | 4   | 38 | 1 | 3 |
| 477 | 0 | 7.05000019  | 12 | 12 | 144 | 41 | 1 | 4 |
| 478 | 0 | 10.86699963 | 8  | 5  | 25  | 35 | 0 | 3 |
| 479 | 0 | 18.21999931 | 12 | 5  | 25  | 33 | 1 | 2 |
| 480 | 0 | 26.61300087 | 13 | 5  | 25  | 48 | 0 | 0 |
| 481 | 0 | 25.00000000 | 12 | 10 | 100 | 47 | 0 | 0 |
| 482 | 0 | 15.69999981 | 12 | 0  | 0   | 34 | 0 | 5 |
| 483 | 0 | 40.25000000 | 13 | 4  | 16  | 33 | 2 | 1 |
| 484 | 0 | 73.59999847 | 13 | 3  | 9   | 31 | 3 | 1 |
| 485 | 0 | 10.59200001 | 8  | 2  | 4   | 58 | 0 | 0 |
| 486 | 0 | 8.00000000  | 12 | 1  | 1   | 49 | 0 | 0 |
| 487 | 0 | 13.39999962 | 8  | 0  | 0   | 55 | 0 | 1 |
| 488 | 0 | 23.70000076 | 14 | 1  | 1   | 44 | 0 | 0 |
| 489 | 0 | 18.89999962 | 9  | 1  | 1   | 44 | 0 | 0 |
| 490 | 0 | 48.29999924 | 16 | 6  | 36  | 36 | 0 | 3 |
| 491 | 0 | 24.46999931 | 12 | 12 | 144 | 38 | 0 | 3 |
| 492 | 0 | 28.62999916 | 16 | 6  | 36  | 37 | 0 | 3 |
| 493 | 0 | 25.31999969 | 12 | 9  | 81  | 47 | 0 | 0 |
| 494 | 0 | 13.52999973 | 12 | 14 | 196 | 47 | 0 | 3 |
| 495 | 0 | 14.80000019 | 12 | 13 | 169 | 32 | 1 | 1 |
| 496 | 0 | 17.39999962 | 12 | 8  | 64  | 43 | 1 | 2 |
| 497 | 0 | 15.97999954 | 11 | 0  | 0   | 42 | 1 | 4 |
| 498 | 0 | 16.57600021 | 12 | 1  | 1   | 56 | 0 | 0 |
| 499 | 0 | 21.85000038 | 13 | 3  | 9   | 38 | 0 | 5 |
| 500 | 0 | 14.60000038 | 12 | 13 | 169 | 52 | 0 | 2 |
| 501 | 0 | 21.60000038 | 12 | 3  | 9   | 50 | 0 | 0 |
| 502 | 0 | 24.00000000 | 16 | 8  | 64  | 33 | 0 | 0 |
| 503 | 0 | 20.88299942 | 16 | 8  | 64  | 44 | 0 | 2 |
| 504 | 0 | 19.50000000 | 12 | 18 | 324 | 41 | 0 | 1 |
| 505 | 0 | 42.79999924 | 12 | 2  | 4   | 45 | 0 | 1 |
| 506 | 0 | 41.50000000 | 14 | 3  | 9   | 53 | 0 | 0 |
| 507 | 0 | 18.96500015 | 14 | 5  | 25  | 53 | 0 | 0 |
| 508 | 0 | 16.10000038 | 12 | 2  | 4   | 42 | 0 | 1 |
| 509 | 0 | 14.69999981 | 13 | 10 | 100 | 32 | 2 | 0 |
| 510 | 0 | 18.79999924 | 12 | 30 | 900 | 56 | 0 | 0 |
| 511 | 0 | 14.75000000 | 11 | 1  | 1   | 37 | 1 | 3 |
| 512 | 0 | 21.00000000 | 12 | 5  | 25  | 40 | 1 | 2 |
| 513 | 0 | 35.40000153 | 15 | 8  | 64  | 54 | 0 | 3 |
| 514 | 0 | 10.69999981 | 7  | 0  | 0   | 53 | 0 | 0 |
| 515 | 0 | 24.50000000 | 12 | 4  | 16  | 48 | 0 | 1 |
| 516 | 0 | 17.04500008 | 12 | 2  | 4   | 36 | 1 | 2 |



|     |   |             |    |    |     |    |   |   |
|-----|---|-------------|----|----|-----|----|---|---|
| 517 | 0 | 18.79999924 | 12 | 30 | 900 | 57 | 0 | 0 |
| 518 | 0 | 14.00000000 | 12 | 25 | 625 | 51 | 0 | 0 |
| 519 | 0 | 18.21400070 | 13 | 3  | 9   | 33 | 0 | 4 |
| 520 | 0 | 20.17700005 | 12 | 20 | 400 | 52 | 0 | 0 |
| 521 | 0 | 8.30000019  | 10 | 20 | 400 | 56 | 0 | 0 |
| 522 | 0 | 14.19999981 | 12 | 0  | 0   | 36 | 1 | 2 |
| 523 | 0 | 21.76799965 | 14 | 15 | 225 | 36 | 1 | 0 |
| 524 | 0 | 29.55299950 | 12 | 10 | 100 | 46 | 0 | 1 |
| 525 | 0 | 4.34999990  | 10 | 4  | 16  | 31 | 0 | 3 |
| 526 | 0 | 24.00000000 | 11 | 3  | 9   | 52 | 0 | 0 |
| 527 | 0 | 18.29999924 | 12 | 10 | 100 | 46 | 0 | 2 |
| 528 | 0 | 17.20000076 | 12 | 9  | 81  | 35 | 2 | 0 |
| 529 | 0 | 16.47599983 | 12 | 7  | 49  | 59 | 0 | 0 |
| 530 | 0 | 13.39999962 | 8  | 12 | 144 | 36 | 0 | 1 |
| 531 | 0 | 44.98799896 | 7  | 0  | 0   | 51 | 1 | 3 |
| 532 | 0 | 18.20000076 | 16 | 16 | 256 | 31 | 1 | 0 |
| 533 | 0 | 28.00000000 | 14 | 4  | 16  | 31 | 0 | 2 |
| 534 | 0 | 11.55000019 | 12 | 7  | 49  | 32 | 1 | 1 |
| 535 | 0 | 28.45000076 | 16 | 7  | 49  | 35 | 1 | 2 |
| 536 | 0 | 15.09599972 | 12 | 14 | 196 | 40 | 0 | 3 |
| 537 | 0 | 8.00899982  | 10 | 2  | 4   | 33 | 1 | 2 |
| 538 | 0 | 10.03999996 | 7  | 20 | 400 | 54 | 0 | 0 |
| 539 | 0 | 16.70000076 | 12 | 5  | 25  | 36 | 1 | 1 |
| 540 | 0 | 8.39999962  | 10 | 10 | 100 | 50 | 0 | 1 |
| 541 | 0 | 13.00000000 | 8  | 20 | 400 | 54 | 0 | 0 |
| 542 | 0 | 17.96999931 | 11 | 10 | 100 | 48 | 0 | 1 |
| 543 | 0 | 18.45000076 | 15 | 8  | 64  | 41 | 0 | 4 |
| 544 | 0 | 31.00000000 | 12 | 11 | 121 | 50 | 0 | 4 |
| 545 | 0 | 24.13500023 | 12 | 3  | 9   | 46 | 0 | 2 |
| 546 | 0 | 31.70000076 | 13 | 6  | 36  | 42 | 0 | 1 |
| 547 | 0 | 10.18999958 | 9  | 4  | 16  | 31 | 1 | 2 |
| 548 | 0 | 21.57399940 | 12 | 4  | 16  | 53 | 0 | 0 |
| 549 | 0 | 26.68000031 | 12 | 9  | 81  | 51 | 0 | 1 |
| 550 | 0 | 17.70000076 | 12 | 10 | 100 | 47 | 0 | 1 |
| 551 | 0 | 29.39999962 | 12 | 3  | 9   | 50 | 0 | 1 |
| 552 | 0 | 22.15900040 | 6  | 2  | 4   | 37 | 0 | 1 |
| 553 | 0 | 35.00000000 | 12 | 2  | 4   | 30 | 2 | 2 |
| 554 | 0 | 8.63000011  | 12 | 0  | 0   | 49 | 0 | 0 |
| 555 | 0 | 17.07999992 | 12 | 8  | 64  | 52 | 0 | 2 |
| 556 | 0 | 32.50000000 | 12 | 6  | 36  | 47 | 0 | 2 |
| 557 | 0 | 16.00000000 | 12 | 15 | 225 | 49 | 0 | 0 |
| 558 | 0 | 18.85000038 | 12 | 15 | 225 | 44 | 0 | 4 |
| 559 | 0 | 17.50000000 | 8  | 9  | 81  | 53 | 0 | 0 |

|     |   |             |    |    |      |    |   |   |
|-----|---|-------------|----|----|------|----|---|---|
| 560 | 0 | 19.39200020 | 12 | 8  | 64   | 30 | 1 | 0 |
| 561 | 0 | 14.44999981 | 12 | 18 | 324  | 54 | 0 | 2 |
| 562 | 0 | 21.79999924 | 7  | 3  | 9    | 47 | 1 | 1 |
| 563 | 0 | 7.69999981  | 15 | 10 | 100  | 56 | 0 | 0 |
| 564 | 0 | 31.79999924 | 12 | 6  | 36   | 49 | 0 | 1 |
| 565 | 0 | 17.25799942 | 6  | 20 | 400  | 48 | 0 | 0 |
| 566 | 0 | 13.39900017 | 12 | 8  | 64   | 49 | 0 | 1 |
| 567 | 0 | 16.07299995 | 12 | 3  | 9    | 56 | 0 | 1 |
| 568 | 0 | 23.26000023 | 12 | 4  | 16   | 46 | 0 | 0 |
| 569 | 0 | 37.29999924 | 12 | 13 | 169  | 45 | 0 | 2 |
| 570 | 0 | 11.00000000 | 12 | 4  | 16   | 32 | 0 | 2 |
| 571 | 0 | 13.07499981 | 12 | 17 | 289  | 43 | 1 | 1 |
| 572 | 0 | 13.69999981 | 12 | 4  | 16   | 34 | 1 | 1 |
| 573 | 0 | 25.10000038 | 12 | 0  | 0    | 30 | 1 | 1 |
| 574 | 0 | 18.60000038 | 17 | 15 | 225  | 38 | 2 | 0 |
| 575 | 0 | 29.00000000 | 16 | 11 | 121  | 33 | 1 | 1 |
| 576 | 0 | 19.23699951 | 12 | 23 | 529  | 52 | 0 | 0 |
| 577 | 0 | 19.85499954 | 11 | 1  | 1    | 43 | 0 | 3 |
| 578 | 0 | 9.44999981  | 12 | 5  | 25   | 33 | 1 | 1 |
| 579 | 0 | 30.00000000 | 10 | 1  | 1    | 45 | 0 | 0 |
| 580 | 0 | 15.00000000 | 10 | 5  | 25   | 36 | 2 | 1 |
| 581 | 0 | 24.70100021 | 12 | 3  | 9    | 34 | 1 | 1 |
| 582 | 0 | 15.89999962 | 14 | 3  | 9    | 37 | 0 | 2 |
| 583 | 0 | 16.23999977 | 10 | 19 | 361  | 46 | 0 | 1 |
| 584 | 0 | 21.10000038 | 12 | 20 | 400  | 47 | 0 | 0 |
| 585 | 0 | 23.00000000 | 16 | 5  | 25   | 31 | 2 | 1 |
| 586 | 0 | 6.34000015  | 5  | 0  | 0    | 57 | 0 | 0 |
| 587 | 0 | 42.25000000 | 12 | 3  | 9    | 30 | 1 | 1 |
| 588 | 0 | 14.69400024 | 12 | 3  | 9    | 30 | 0 | 0 |
| 589 | 0 | 21.41699982 | 12 | 7  | 49   | 44 | 0 | 3 |
| 590 | 0 | 20.20000076 | 13 | 7  | 49   | 53 | 0 | 0 |
| 591 | 0 | 12.09000015 | 8  | 1  | 1    | 51 | 0 | 0 |
| 592 | 0 | 24.76000023 | 12 | 13 | 169  | 39 | 1 | 3 |
| 593 | 0 | 23.00000000 | 8  | 0  | 0    | 52 | 0 | 0 |
| 594 | 0 | 19.36499977 | 8  | 0  | 0    | 46 | 0 | 4 |
| 595 | 0 | 5.55000019  | 12 | 12 | 144  | 47 | 0 | 5 |
| 596 | 0 | 68.03500366 | 8  | 0  | 0    | 52 | 0 | 2 |
| 597 | 0 | 29.29999924 | 12 | 5  | 25   | 45 | 0 | 2 |
| 598 | 0 | 18.50000000 | 11 | 45 | 2025 | 60 | 0 | 0 |
| 599 | 0 | 22.58200073 | 13 | 10 | 100  | 41 | 0 | 2 |
| 600 | 0 | 21.50000000 | 8  | 2  | 4    | 39 | 0 | 3 |
| 601 | 0 | 28.06999969 | 12 | 3  | 9    | 49 | 0 | 1 |
| 602 | 0 | 50.29999924 | 15 | 1  | 1    | 32 | 1 | 1 |

|     |   |             |    |    |     |    |   |   |
|-----|---|-------------|----|----|-----|----|---|---|
| 603 | 0 | 23.50000000 | 12 | 5  | 25  | 33 | 1 | 3 |
| 604 | 0 | 15.50000000 | 10 | 10 | 100 | 36 | 0 | 4 |
| 605 | 0 | 13.43999958 | 13 | 4  | 16  | 37 | 3 | 3 |
| 606 | 0 | 8.10000038  | 12 | 7  | 49  | 30 | 1 | 2 |
| 607 | 0 | 9.80000019  | 11 | 9  | 81  | 44 | 1 | 1 |
| 608 | 0 | 20.29999924 | 12 | 5  | 25  | 48 | 0 | 1 |
| 609 | 0 | 15.00000000 | 11 | 4  | 16  | 40 | 0 | 4 |
| 610 | 0 | 56.09999847 | 13 | 11 | 121 | 47 | 0 | 0 |
| 611 | 0 | 22.84600067 | 12 | 9  | 81  | 36 | 0 | 2 |
| 612 | 0 | 22.22500038 | 11 | 4  | 16  | 40 | 0 | 2 |
| 613 | 0 | 17.63500023 | 12 | 2  | 4   | 46 | 0 | 1 |
| 614 | 0 | 18.50000000 | 12 | 23 | 529 | 52 | 0 | 0 |
| 615 | 0 | 13.39000034 | 12 | 3  | 9   | 44 | 0 | 1 |
| 616 | 0 | 15.14999962 | 10 | 15 | 225 | 45 | 0 | 1 |
| 617 | 0 | 16.20000076 | 7  | 8  | 64  | 30 | 2 | 1 |
| 618 | 0 | 33.91999817 | 12 | 3  | 9   | 40 | 1 | 3 |
| 619 | 0 | 14.00000000 | 12 | 25 | 625 | 43 | 0 | 1 |
| 620 | 0 | 16.73600006 | 12 | 2  | 4   | 49 | 0 | 2 |
| 621 | 0 | 30.64999962 | 12 | 0  | 0   | 46 | 1 | 4 |
| 622 | 0 | 12.39999962 | 11 | 19 | 361 | 52 | 0 | 0 |
| 623 | 0 | 19.02199936 | 12 | 3  | 9   | 31 | 1 | 1 |
| 624 | 0 | 11.20300007 | 10 | 7  | 49  | 42 | 1 | 1 |
| 625 | 0 | 19.87599945 | 11 | 1  | 1   | 33 | 0 | 3 |
| 626 | 0 | 57.00000000 | 16 | 9  | 81  | 57 | 0 | 0 |
| 627 | 0 | 18.29000092 | 10 | 3  | 9   | 49 | 0 | 0 |
| 628 | 0 | 20.21999931 | 14 | 8  | 64  | 45 | 0 | 1 |
| 629 | 0 | 22.14999962 | 11 | 0  | 0   | 56 | 0 | 0 |
| 630 | 0 | 30.62299919 | 12 | 5  | 25  | 41 | 1 | 3 |
| 631 | 0 | 9.38000011  | 5  | 20 | 400 | 56 | 0 | 0 |
| 632 | 0 | 22.00000000 | 10 | 3  | 9   | 48 | 0 | 1 |
| 633 | 0 | 23.67499924 | 16 | 12 | 144 | 52 | 0 | 2 |
| 634 | 0 | 33.67100143 | 12 | 5  | 25  | 51 | 0 | 0 |
| 635 | 0 | 12.36699963 | 11 | 1  | 1   | 35 | 0 | 3 |
| 636 | 0 | 21.95000076 | 12 | 0  | 0   | 45 | 0 | 0 |
| 637 | 0 | 32.00000000 | 12 | 7  | 49  | 54 | 0 | 0 |
| 638 | 0 | 22.61000061 | 12 | 13 | 169 | 54 | 0 | 2 |
| 639 | 0 | 12.09200001 | 12 | 3  | 9   | 31 | 1 | 0 |
| 640 | 0 | 3.77699995  | 6  | 0  | 0   | 53 | 0 | 3 |
| 641 | 0 | 36.00000000 | 14 | 2  | 4   | 35 | 2 | 2 |
| 642 | 0 | 26.89999962 | 12 | 0  | 0   | 36 | 1 | 3 |
| 643 | 0 | 32.24200058 | 12 | 2  | 4   | 59 | 0 | 0 |
| 644 | 0 | 35.02000046 | 16 | 1  | 1   | 54 | 0 | 0 |
| 645 | 0 | 37.59999847 | 12 | 10 | 100 | 37 | 1 | 1 |

|     |   |             |    |    |      |    |   |   |
|-----|---|-------------|----|----|------|----|---|---|
| 646 | 0 | 1.50000000  | 12 | 10 | 100  | 44 | 0 | 0 |
| 647 | 0 | 96.00000000 | 17 | 1  | 1    | 34 | 1 | 2 |
| 648 | 0 | 18.14999962 | 12 | 3  | 9    | 49 | 0 | 0 |
| 649 | 0 | 15.50000000 | 12 | 32 | 1024 | 49 | 0 | 0 |
| 650 | 0 | 14.00000000 | 9  | 0  | 0    | 60 | 0 | 0 |
| 651 | 0 | 14.75599957 | 12 | 7  | 49   | 51 | 0 | 0 |
| 652 | 0 | 22.00000000 | 12 | 5  | 25   | 30 | 1 | 1 |
| 653 | 0 | 24.46599960 | 12 | 2  | 4    | 47 | 0 | 2 |
| 654 | 0 | 24.39999962 | 12 | 5  | 25   | 36 | 0 | 4 |
| 655 | 0 | 24.00000000 | 12 | 3  | 9    | 35 | 1 | 3 |
| 656 | 0 | 15.50000000 | 12 | 25 | 625  | 58 | 0 | 0 |
| 657 | 0 | 30.79999924 | 14 | 0  | 0    | 41 | 1 | 3 |
| 658 | 0 | 10.65999985 | 10 | 3  | 9    | 51 | 0 | 1 |
| 659 | 0 | 13.35000038 | 12 | 10 | 100  | 47 | 0 | 0 |
| 660 | 0 | 10.09000015 | 9  | 10 | 100  | 45 | 1 | 2 |
| 661 | 0 | 55.59999847 | 14 | 7  | 49   | 60 | 0 | 0 |
| 662 | 0 | 25.70000076 | 16 | 5  | 25   | 30 | 1 | 1 |
| 663 | 0 | 29.00000000 | 11 | 15 | 225  | 55 | 0 | 0 |
| 664 | 0 | 7.28599977  | 12 | 1  | 1    | 32 | 1 | 2 |
| 665 | 0 | 37.75199890 | 12 | 5  | 25   | 36 | 0 | 2 |
| 666 | 0 | 13.07199955 | 12 | 9  | 81   | 55 | 0 | 0 |
| 667 | 0 | 7.04400015  | 12 | 18 | 324  | 47 | 0 | 0 |
| 668 | 0 | 18.20000076 | 12 | 1  | 1    | 47 | 0 | 1 |
| 669 | 0 | 27.00000000 | 11 | 0  | 0    | 37 | 0 | 1 |
| 670 | 0 | 30.29999924 | 12 | 6  | 36   | 50 | 0 | 2 |
| 671 | 0 | 12.00000000 | 12 | 1  | 1    | 30 | 0 | 3 |
| 672 | 0 | 31.50000000 | 17 | 2  | 4    | 48 | 0 | 1 |
| 673 | 0 | 27.09199905 | 10 | 15 | 225  | 43 | 0 | 2 |
| 674 | 0 | 20.96800041 | 11 | 25 | 625  | 48 | 1 | 0 |
| 675 | 0 | 27.00000000 | 14 | 1  | 1    | 41 | 1 | 2 |
| 676 | 0 | 11.22500038 | 12 | 0  | 0    | 50 | 0 | 0 |
| 677 | 0 | 37.70000076 | 8  | 0  | 0    | 58 | 0 | 0 |
| 678 | 0 | 28.20000076 | 13 | 0  | 0    | 38 | 0 | 5 |
| 679 | 0 | 34.00000000 | 12 | 8  | 64   | 37 | 0 | 1 |
| 680 | 0 | 63.20000076 | 16 | 22 | 484  | 50 | 0 | 0 |
| 681 | 0 | 7.50000000  | 8  | 5  | 25   | 42 | 0 | 4 |
| 682 | 0 | 17.40999985 | 9  | 10 | 100  | 37 | 1 | 3 |
| 683 | 0 | 51.00000000 | 16 | 1  | 1    | 41 | 0 | 2 |
| 684 | 0 | 12.91600037 | 12 | 1  | 1    | 31 | 0 | 2 |
| 685 | 0 | 21.89999962 | 12 | 6  | 36   | 51 | 0 | 0 |
| 686 | 0 | 17.63999939 | 12 | 4  | 16   | 36 | 1 | 2 |
| 687 | 0 | 20.00000000 | 15 | 6  | 36   | 54 | 0 | 0 |
| 688 | 0 | 15.00000000 | 12 | 0  | 0    | 49 | 0 | 0 |

|     |               |    |    |      |    |   |   |
|-----|---------------|----|----|------|----|---|---|
| 689 | 0 14.06000042 | 9  | 1  | 1    | 48 | 1 | 1 |
| 690 | 0 15.82499981 | 9  | 3  | 9    | 42 | 0 | 2 |
| 691 | 0 16.51000023 | 12 | 15 | 225  | 41 | 1 | 2 |
| 692 | 0 13.00000000 | 16 | 33 | 1089 | 55 | 0 | 0 |
| 693 | 0 10.00000000 | 9  | 2  | 4    | 42 | 0 | 0 |
| 694 | 0 22.00000000 | 15 | 1  | 1    | 32 | 0 | 1 |
| 695 | 0 29.79999924 | 12 | 10 | 100  | 43 | 0 | 2 |
| 696 | 0 15.00000000 | 12 | 0  | 0    | 33 | 1 | 3 |
| 697 | 0 22.29999924 | 15 | 14 | 196  | 48 | 0 | 1 |
| 698 | 0 14.55000019 | 12 | 15 | 225  | 43 | 0 | 2 |
| 699 | 0 19.72999954 | 17 | 15 | 225  | 47 | 1 | 3 |
| 700 | 0 35.00000000 | 12 | 10 | 100  | 54 | 0 | 0 |
| 701 | 0 21.01399994 | 12 | 6  | 36   | 51 | 0 | 1 |
| 702 | 0 10.87600040 | 10 | 18 | 324  | 51 | 0 | 1 |
| 703 | 0 27.85000038 | 13 | 15 | 225  | 43 | 1 | 1 |
| 704 | 0 9.56000042  | 12 | 30 | 900  | 53 | 0 | 0 |
| 705 | 0 30.29999924 | 11 | 15 | 225  | 34 | 1 | 1 |
| 706 | 0 7.71999979  | 8  | 10 | 100  | 31 | 1 | 1 |
| 707 | 0 10.55000019 | 12 | 0  | 0    | 56 | 0 | 0 |
| 708 | 0 24.10600090 | 16 | 0  | 0    | 42 | 0 | 1 |
| 709 | 0 22.99500084 | 12 | 4  | 16   | 32 | 0 | 2 |
| 710 | 0 6.00000000  | 12 | 0  | 0    | 35 | 1 | 3 |
| 711 | 0 24.35000038 | 12 | 3  | 9    | 30 | 1 | 1 |
| 712 | 0 7.60799980  | 10 | 20 | 400  | 51 | 0 | 0 |
| 713 | 0 28.20000076 | 12 | 3  | 9    | 47 | 0 | 3 |
| 714 | 0 16.14999962 | 12 | 1  | 1    | 54 | 0 | 1 |
| 715 | 0 51.20000076 | 15 | 5  | 25   | 31 | 3 | 0 |
| 716 | 0 12.64599991 | 10 | 7  | 49   | 47 | 0 | 0 |
| 717 | 0 19.00000000 | 14 | 6  | 36   | 47 | 0 | 3 |
| 718 | 0 19.00000000 | 12 | 2  | 4    | 40 | 0 | 3 |
| 719 | 0 14.39999962 | 8  | 0  | 0    | 48 | 0 | 0 |
| 720 | 0 7.23199987  | 8  | 10 | 100  | 34 | 0 | 7 |
| 721 | 0 21.94300079 | 12 | 6  | 36   | 38 | 0 | 3 |
| 722 | 0 47.50000000 | 12 | 4  | 16   | 32 | 1 | 3 |
| 723 | 0 28.89999962 | 16 | 8  | 64   | 48 | 0 | 1 |
| 724 | 0 12.39999962 | 12 | 18 | 324  | 41 | 0 | 2 |
| 725 | 0 6.53100014  | 5  | 7  | 49   | 49 | 0 | 2 |
| 726 | 0 22.42200089 | 8  | 15 | 225  | 59 | 0 | 0 |
| 727 | 0 22.20000076 | 13 | 7  | 49   | 58 | 0 | 0 |
| 728 | 0 77.00000000 | 12 | 8  | 64   | 41 | 0 | 3 |
| 729 | 0 88.00000000 | 12 | 8  | 64   | 45 | 0 | 2 |
| 730 | 0 26.04000092 | 14 | 3  | 9    | 30 | 1 | 1 |
| 731 | 0 63.50000000 | 12 | 10 | 100  | 41 | 0 | 1 |

|     |   |             |    |    |     |    |   |   |
|-----|---|-------------|----|----|-----|----|---|---|
| 732 | 0 | 12.10000038 | 12 | 9  | 81  | 30 | 2 | 0 |
| 733 | 0 | 17.50499916 | 12 | 24 | 576 | 53 | 0 | 1 |
| 734 | 0 | 18.00000000 | 12 | 12 | 144 | 31 | 0 | 0 |
| 735 | 0 | 28.06900024 | 14 | 2  | 4   | 43 | 0 | 2 |
| 736 | 0 | 14.00000000 | 12 | 6  | 36  | 31 | 1 | 1 |
| 737 | 0 | 8.11699963  | 12 | 18 | 324 | 51 | 0 | 0 |
| 738 | 0 | 11.89500046 | 9  | 17 | 289 | 43 | 0 | 0 |
| 739 | 0 | 45.25000000 | 14 | 7  | 49  | 31 | 1 | 2 |
| 740 | 0 | 31.10600090 | 11 | 6  | 36  | 48 | 0 | 0 |
| 741 | 0 | 4.00000000  | 12 | 10 | 100 | 31 | 1 | 1 |
| 742 | 0 | 40.50000000 | 12 | 5  | 25  | 44 | 0 | 1 |
| 743 | 0 | 21.62000084 | 11 | 7  | 49  | 48 | 0 | 1 |
| 744 | 0 | 23.42600060 | 12 | 11 | 121 | 53 | 0 | 1 |
| 745 | 0 | 26.00000000 | 10 | 14 | 196 | 42 | 0 | 3 |
| 746 | 0 | 7.84000015  | 12 | 5  | 25  | 39 | 2 | 6 |
| 747 | 0 | 6.80000019  | 10 | 2  | 4   | 32 | 1 | 2 |
| 748 | 0 | 5.32999992  | 12 | 4  | 16  | 36 | 0 | 2 |
| 749 | 0 | 28.20000076 | 13 | 5  | 25  | 40 | 0 | 2 |
| 750 | 0 | 10.00000000 | 12 | 14 | 196 | 31 | 2 | 3 |
| 751 | 0 | 9.95199966  | 12 | 4  | 16  | 43 | 0 | 0 |
| 752 | 0 | 24.98399925 | 12 | 15 | 225 | 60 | 0 | 0 |
| 753 | 0 | 28.36300087 | 9  | 12 | 144 | 39 | 0 | 3 |

```
mode.2p <- tpm(fm("hours", xvars),
               data = mroz,
               link_part1 = "logit",
               family_part2 = Gamma(link = "log"))

summary(mode.2p)
```

\$Firstpart.model

Call:

```
glm(formula = nonzero ~ nwifeinc + educ + exper + expersq + age +
     kidslt6 + kidsge6, family = binomial(link = "logit"), data = mroz)
```

Coefficients:

|             | Estimate  | Std. Error | z value | Pr(> z )     |
|-------------|-----------|------------|---------|--------------|
| (Intercept) | 0.425452  | 0.860365   | 0.495   | 0.62095      |
| nwifeinc    | -0.021345 | 0.008421   | -2.535  | 0.01126 *    |
| educ        | 0.221170  | 0.043439   | 5.091   | 3.55e-07 *** |
| exper       | 0.205870  | 0.032057   | 6.422   | 1.34e-10 *** |

|         |           |          |        |          |     |
|---------|-----------|----------|--------|----------|-----|
| expersq | -0.003154 | 0.001016 | -3.104 | 0.00191  | **  |
| age     | -0.088024 | 0.014573 | -6.040 | 1.54e-09 | *** |
| kidslt6 | -1.443354 | 0.203583 | -7.090 | 1.34e-12 | *** |
| kidsge6 | 0.060112  | 0.074789 | 0.804  | 0.42154  |     |

---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 1029.75 on 752 degrees of freedom  
 Residual deviance: 803.53 on 745 degrees of freedom  
 AIC: 819.53

Number of Fisher Scoring iterations: 4

\$Secondpart.model

Call:

glm(formula = hours ~ nwifeinc + educ + exper + expersq + age +  
 kidslt6 + kidsge6, family = Gamma(link = "log"), data = mroz)

Coefficients:

|             | Estimate   | Std. Error | t value | Pr(> t )     |
|-------------|------------|------------|---------|--------------|
| (Intercept) | 7.7164988  | 0.2928967  | 26.345  | < 2e-16 ***  |
| nwifeinc    | -0.0003793 | 0.0030546  | -0.124  | 0.901231     |
| educ        | -0.0191886 | 0.0138927  | -1.381  | 0.167951     |
| exper       | 0.0427191  | 0.0123052  | 3.472   | 0.000571 *** |
| expersq     | -0.0005876 | 0.0003697  | -1.589  | 0.112732     |
| age         | -0.0148794 | 0.0049825  | -2.986  | 0.002988 **  |
| kidslt6     | -0.2887415 | 0.0815330  | -3.541  | 0.000443 *** |
| kidsge6     | -0.0559110 | 0.0256653  | -2.178  | 0.029927 *   |

---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for Gamma family taken to be 0.3763689)

Null deviance: 261.43 on 427 degrees of freedom  
 Residual deviance: 237.94 on 420 degrees of freedom  
 AIC: 6898.7

Number of Fisher Scoring iterations: 7

```
# Provisional
mod.2P2 <- twopartm::tpm(hours~.,
  data=d_dospartes,
  link_part1 = "logit",
  family_part2 = Gamma(link = "log"))
summary(mod.2P2)
```

\$Firstpart.model

Call:

```
glm(formula = nonzero ~ ., family = binomial(link = "logit"),
  data = d_dospartes)
```

Coefficients:

|             | Estimate  | Std. Error | z value | Pr(> z )     |
|-------------|-----------|------------|---------|--------------|
| (Intercept) | 0.425452  | 0.860365   | 0.495   | 0.62095      |
| nwifeinc    | -0.021345 | 0.008421   | -2.535  | 0.01126 *    |
| educ        | 0.221170  | 0.043439   | 5.091   | 3.55e-07 *** |
| exper       | 0.205870  | 0.032057   | 6.422   | 1.34e-10 *** |
| expersq     | -0.003154 | 0.001016   | -3.104  | 0.00191 **   |
| age         | -0.088024 | 0.014573   | -6.040  | 1.54e-09 *** |
| kidslt6     | -1.443354 | 0.203583   | -7.090  | 1.34e-12 *** |
| kidsge6     | 0.060112  | 0.074789   | 0.804   | 0.42154      |

---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 1029.75 on 752 degrees of freedom  
 Residual deviance: 803.53 on 745 degrees of freedom  
 AIC: 819.53

Number of Fisher Scoring iterations: 4

\$Secondpart.model

Call:

```
glm(formula = hours ~ ., family = Gamma(link = "log"), data = d_dospartes)
```

Coefficients:

|  | Estimate | Std. Error | t value | Pr(> t ) |
|--|----------|------------|---------|----------|
|--|----------|------------|---------|----------|



```

(Intercept)  7.7164988  0.2928967  26.345  < 2e-16 ***
nwifeinc     -0.0003793  0.0030546  -0.124  0.901231
educ         -0.0191886  0.0138927  -1.381  0.167951
exper        0.0427191  0.0123052   3.472  0.000571 ***
expersq      -0.0005876  0.0003697  -1.589  0.112732
age          -0.0148794  0.0049825  -2.986  0.002988 **
kidslt6      -0.2887415  0.0815330  -3.541  0.000443 ***
kidsge6      -0.0559110  0.0256653  -2.178  0.029927 *

```

---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for Gamma family taken to be 0.3763689)

Null deviance: 261.43 on 427 degrees of freedom  
Residual deviance: 237.94 on 420 degrees of freedom  
AIC: 6898.7

Number of Fisher Scoring iterations: 7

## 8.4 Ajustar los modelos

Para esto es necesario ajustar las variables

```

# Creando la variable dicotómica para hours

mroz <- mroz %>%
  mutate(d_hours=ifelse(hours==0,0,1)) %>%
  print()

```

|    | inlf | hours | kidslt6 | kidsge6 | age | educ | wage   | repwage | hushrs | husage | huseduc |
|----|------|-------|---------|---------|-----|------|--------|---------|--------|--------|---------|
| 1  | 1    | 1610  | 1       | 0       | 32  | 12   | 3.3540 | 2.65    | 2708   | 34     | 12      |
| 2  | 1    | 1656  | 0       | 2       | 30  | 12   | 1.3889 | 2.65    | 2310   | 30     | 9       |
| 3  | 1    | 1980  | 1       | 3       | 35  | 12   | 4.5455 | 4.04    | 3072   | 40     | 12      |
| 4  | 1    | 456   | 0       | 3       | 34  | 12   | 1.0965 | 3.25    | 1920   | 53     | 10      |
| 5  | 1    | 1568  | 1       | 2       | 31  | 14   | 4.5918 | 3.60    | 2000   | 32     | 12      |
| 6  | 1    | 2032  | 0       | 0       | 54  | 12   | 4.7421 | 4.70    | 1040   | 57     | 11      |
| 7  | 1    | 1440  | 0       | 2       | 37  | 16   | 8.3333 | 5.95    | 2670   | 37     | 12      |
| 8  | 1    | 1020  | 0       | 0       | 54  | 12   | 7.8431 | 9.98    | 4120   | 53     | 8       |
| 9  | 1    | 1458  | 0       | 2       | 48  | 12   | 2.1262 | 0.00    | 1995   | 52     | 4       |
| 10 | 1    | 1600  | 0       | 2       | 39  | 12   | 4.6875 | 4.15    | 2100   | 43     | 12      |
| 11 | 1    | 1969  | 0       | 1       | 33  | 12   | 4.0630 | 4.30    | 2450   | 34     | 12      |

|    |   |      |   |   |    |    |         |      |      |    |    |
|----|---|------|---|---|----|----|---------|------|------|----|----|
| 12 | 1 | 1960 | 0 | 1 | 42 | 11 | 4.5918  | 4.58 | 2375 | 47 | 14 |
| 13 | 1 | 240  | 1 | 2 | 30 | 12 | 2.0833  | 0.00 | 2830 | 33 | 16 |
| 14 | 1 | 997  | 0 | 2 | 43 | 12 | 2.2668  | 3.50 | 3317 | 46 | 12 |
| 15 | 1 | 1848 | 0 | 1 | 43 | 10 | 3.6797  | 3.38 | 2024 | 45 | 17 |
| 16 | 1 | 1224 | 0 | 3 | 35 | 11 | 1.3472  | 0.00 | 1694 | 38 | 12 |
| 17 | 1 | 1400 | 0 | 2 | 43 | 12 | 3.2143  | 4.00 | 2156 | 45 | 12 |
| 18 | 1 | 640  | 0 | 5 | 39 | 12 | 5.1750  | 2.25 | 2250 | 40 | 12 |
| 19 | 1 | 2000 | 0 | 0 | 45 | 12 | 2.0000  | 2.30 | 2024 | 51 | 11 |
| 20 | 1 | 1324 | 0 | 4 | 35 | 12 | 7.5529  | 3.94 | 2123 | 40 | 10 |
| 21 | 1 | 2215 | 0 | 2 | 42 | 16 | 3.5052  | 3.30 | 4160 | 48 | 16 |
| 22 | 1 | 1680 | 0 | 0 | 30 | 12 | 3.5714  | 3.80 | 2000 | 35 | 12 |
| 23 | 1 | 1600 | 0 | 0 | 48 | 13 | 3.2500  | 3.26 | 2420 | 52 | 17 |
| 24 | 1 | 800  | 0 | 0 | 45 | 12 | 3.2500  | 2.20 | 1150 | 53 | 17 |
| 25 | 1 | 1955 | 1 | 1 | 31 | 12 | 2.1545  | 2.30 | 2024 | 31 | 12 |
| 26 | 1 | 660  | 0 | 2 | 43 | 17 | 3.7879  | 0.00 | 1904 | 43 | 17 |
| 27 | 1 | 525  | 0 | 0 | 59 | 12 | 4.0000  | 3.18 | 2448 | 53 | 16 |
| 28 | 1 | 1904 | 0 | 3 | 32 | 12 | 4.7269  | 6.07 | 2000 | 33 | 13 |
| 29 | 1 | 1516 | 1 | 0 | 31 | 17 | 7.2559  | 6.00 | 2390 | 30 | 17 |
| 30 | 1 | 346  | 0 | 0 | 42 | 12 | 5.8671  | 6.39 | 1920 | 47 | 10 |
| 31 | 1 | 1040 | 0 | 0 | 50 | 11 | 1.5385  | 0.00 | 1840 | 53 | 10 |
| 32 | 1 | 732  | 0 | 0 | 59 | 16 | 2.4590  | 2.50 | 3360 | 57 | 17 |
| 33 | 1 | 1880 | 0 | 2 | 36 | 13 | 5.8511  | 5.20 | 2284 | 35 | 13 |
| 34 | 1 | 1680 | 0 | 1 | 51 | 12 | 3.5714  | 3.29 | 1875 | 50 | 8  |
| 35 | 1 | 2081 | 0 | 3 | 45 | 16 | 3.8068  | 4.19 | 2140 | 47 | 17 |
| 36 | 1 | 690  | 0 | 1 | 42 | 11 | 2.4638  | 0.00 | 1896 | 44 | 8  |
| 37 | 1 | 4210 | 0 | 0 | 46 | 12 | 2.3753  | 4.63 | 1040 | 49 | 16 |
| 38 | 1 | 2205 | 0 | 1 | 46 | 10 | 4.5351  | 4.55 | 2200 | 52 | 12 |
| 39 | 1 | 1952 | 0 | 0 | 51 | 14 | 5.6183  | 5.60 | 1952 | 58 | 12 |
| 40 | 1 | 1302 | 0 | 0 | 30 | 17 | 14.6310 | 9.53 | 1560 | 30 | 17 |
| 41 | 1 | 112  | 1 | 2 | 30 | 12 | 2.6786  | 0.00 | 4030 | 33 | 16 |
| 42 | 1 | 893  | 0 | 0 | 57 | 12 | 3.9194  | 3.50 | 2570 | 58 | 12 |
| 43 | 1 | 583  | 1 | 2 | 31 | 16 | 2.5729  | 9.98 | 1530 | 34 | 16 |
| 44 | 1 | 480  | 0 | 2 | 48 | 12 | 4.5375  | 4.65 | 3149 | 48 | 8  |
| 45 | 1 | 1900 | 0 | 3 | 30 | 12 | 2.0000  | 2.23 | 2690 | 32 | 12 |
| 46 | 1 | 576  | 0 | 2 | 34 | 12 | 3.4722  | 3.84 | 3096 | 33 | 12 |
| 47 | 1 | 2056 | 0 | 2 | 48 | 16 | 2.0161  | 0.00 | 2552 | 53 | 16 |
| 48 | 1 | 1984 | 0 | 0 | 45 | 12 | 4.5716  | 4.82 | 2040 | 47 | 11 |
| 49 | 1 | 2640 | 0 | 0 | 51 | 12 | 2.2727  | 0.00 | 2180 | 50 | 13 |
| 50 | 1 | 240  | 0 | 2 | 30 | 12 | 2.6375  | 0.00 | 1864 | 37 | 12 |
| 51 | 1 | 1173 | 0 | 1 | 46 | 12 | 2.2899  | 2.50 | 2068 | 46 | 12 |
| 52 | 1 | 3640 | 0 | 0 | 58 | 12 | 1.0989  | 0.00 | 2010 | 58 | 12 |
| 53 | 1 | 340  | 0 | 8 | 37 | 12 | 1.1765  | 0.00 | 2152 | 40 | 10 |
| 54 | 1 | 500  | 0 | 0 | 52 | 8  | 1.6000  | 0.00 | 1496 | 54 | 11 |

|    |   |      |   |   |    |    |         |      |      |    |    |
|----|---|------|---|---|----|----|---------|------|------|----|----|
| 55 | 1 | 1599 | 0 | 0 | 52 | 10 | 1.8762  | 2.80 | 2100 | 47 | 4  |
| 56 | 1 | 1830 | 0 | 0 | 31 | 16 | 4.0437  | 4.20 | 1960 | 35 | 14 |
| 57 | 1 | 1920 | 0 | 0 | 55 | 14 | 9.6354  | 8.75 | 1985 | 55 | 15 |
| 58 | 1 | 2052 | 0 | 0 | 34 | 17 | 8.0409  | 8.25 | 2020 | 33 | 17 |
| 59 | 1 | 2312 | 0 | 0 | 55 | 14 | 4.5990  | 5.58 | 2178 | 56 | 16 |
| 60 | 1 | 196  | 0 | 2 | 39 | 12 | 2.1429  | 2.50 | 3684 | 39 | 12 |
| 61 | 1 | 2500 | 0 | 3 | 40 | 14 | 4.4000  | 5.50 | 5010 | 42 | 13 |
| 62 | 1 | 1980 | 0 | 4 | 43 | 12 | 3.5354  | 3.75 | 1880 | 47 | 12 |
| 63 | 1 | 1840 | 0 | 0 | 48 | 8  | 2.7174  | 4.80 | 1904 | 56 | 8  |
| 64 | 1 | 320  | 0 | 0 | 47 | 12 | 6.2500  | 6.25 | 2083 | 47 | 12 |
| 65 | 1 | 419  | 0 | 4 | 41 | 12 | 11.9330 | 6.30 | 2125 | 44 | 12 |
| 66 | 1 | 1880 | 0 | 0 | 36 | 8  | 3.5931  | 3.75 | 1985 | 37 | 12 |
| 67 | 1 | 72   | 0 | 2 | 46 | 17 | 6.9444  | 0.00 | 2640 | 48 | 17 |
| 68 | 1 | 120  | 0 | 0 | 34 | 12 | 2.9167  | 0.00 | 2070 | 51 | 8  |
| 69 | 1 | 1885 | 0 | 3 | 41 | 12 | 3.0769  | 2.90 | 2107 | 48 | 8  |
| 70 | 1 | 240  | 0 | 1 | 51 | 12 | 3.7500  | 0.00 | 2250 | 54 | 10 |
| 71 | 1 | 1729 | 0 | 0 | 33 | 12 | 5.7259  | 4.76 | 2880 | 34 | 16 |
| 72 | 1 | 1850 | 0 | 0 | 52 | 12 | 3.6757  | 3.40 | 1848 | 53 | 12 |
| 73 | 1 | 2033 | 0 | 0 | 58 | 9  | 5.1648  | 4.32 | 1927 | 53 | 7  |
| 74 | 1 | 608  | 2 | 4 | 34 | 10 | 8.2237  | 3.00 | 1304 | 38 | 9  |
| 75 | 1 | 1153 | 0 | 1 | 31 | 12 | 4.3365  | 4.52 | 3000 | 35 | 12 |
| 76 | 1 | 2208 | 0 | 1 | 48 | 12 | 4.9819  | 5.31 | 1892 | 52 | 12 |
| 77 | 1 | 252  | 0 | 2 | 32 | 12 | 0.3571  | 0.00 | 3644 | 32 | 12 |
| 78 | 1 | 337  | 0 | 0 | 49 | 17 | 2.9674  | 0.00 | 1430 | 47 | 17 |
| 79 | 1 | 90   | 2 | 2 | 32 | 15 | 1.0000  | 0.00 | 2350 | 31 | 14 |
| 80 | 1 | 1174 | 0 | 0 | 58 | 12 | 2.5554  | 4.87 | 1948 | 59 | 16 |
| 81 | 1 | 372  | 0 | 0 | 50 | 6  | 0.8602  | 2.25 | 1804 | 42 | 12 |
| 82 | 1 | 30   | 0 | 0 | 60 | 14 | 1.0000  | 0.00 | 2326 | 51 | 12 |
| 83 | 1 | 1800 | 0 | 1 | 50 | 12 | 2.9261  | 0.00 | 1739 | 55 | 11 |
| 84 | 1 | 282  | 0 | 0 | 56 | 14 | 3.5461  | 2.50 | 1176 | 57 | 17 |
| 85 | 1 | 720  | 0 | 0 | 51 | 9  | 1.6264  | 2.20 | 1100 | 55 | 8  |
| 86 | 1 | 1440 | 0 | 1 | 54 | 17 | 8.3333  | 6.00 | 1528 | 58 | 17 |
| 87 | 1 | 2100 | 0 | 0 | 59 | 13 | 3.0952  | 2.95 | 2250 | 52 | 15 |
| 88 | 1 | 1000 | 0 | 2 | 46 | 9  | 2.7000  | 2.35 | 1927 | 47 | 10 |
| 89 | 1 | 952  | 0 | 1 | 46 | 15 | 5.2521  | 0.00 | 2414 | 47 | 16 |
| 90 | 1 | 1413 | 1 | 3 | 39 | 12 | 1.4154  | 2.20 | 768  | 49 | 8  |
| 91 | 1 | 2100 | 0 | 2 | 44 | 12 | 4.7986  | 4.85 | 1984 | 43 | 14 |
| 92 | 1 | 120  | 2 | 0 | 33 | 12 | 1.6667  | 2.37 | 2246 | 36 | 12 |
| 93 | 1 | 3000 | 1 | 2 | 33 | 12 | 1.1217  | 0.00 | 3024 | 30 | 17 |
| 94 | 1 | 1000 | 0 | 2 | 48 | 12 | 0.5000  | 0.00 | 2921 | 52 | 12 |
| 95 | 1 | 336  | 0 | 4 | 31 | 12 | 0.7143  | 0.00 | 2045 | 37 | 17 |
| 96 | 1 | 1216 | 0 | 1 | 45 | 12 | 2.7961  | 2.90 | 1928 | 44 | 12 |
| 97 | 1 | 988  | 0 | 1 | 45 | 12 | 4.8583  | 4.50 | 1920 | 44 | 10 |

|     |   |      |   |   |    |    |        |      |      |    |    |
|-----|---|------|---|---|----|----|--------|------|------|----|----|
| 98  | 1 | 2581 | 0 | 2 | 32 | 13 | 1.7435 | 2.60 | 2280 | 37 | 17 |
| 99  | 1 | 2030 | 0 | 0 | 47 | 12 | 2.4631 | 2.80 | 2300 | 47 | 17 |
| 100 | 1 | 413  | 0 | 2 | 34 | 13 | 2.4213 | 3.00 | 2480 | 35 | 13 |
| 101 | 1 | 782  | 0 | 1 | 37 | 12 | 1.5345 | 2.30 | 1135 | 34 | 10 |
| 102 | 1 | 1388 | 0 | 1 | 36 | 12 | 2.8818 | 1.87 | 1384 | 39 | 12 |
| 103 | 1 | 1450 | 1 | 2 | 47 | 12 | 2.4069 | 3.00 | 1848 | 50 | 14 |
| 104 | 1 | 1720 | 0 | 1 | 48 | 16 | 5.2326 | 4.68 | 2499 | 46 | 17 |
| 105 | 1 | 800  | 0 | 2 | 42 | 12 | 3.7500 | 2.50 | 2390 | 43 | 12 |
| 106 | 1 | 360  | 0 | 3 | 33 | 13 | 1.3889 | 0.00 | 2400 | 44 | 14 |
| 107 | 1 | 2000 | 0 | 0 | 46 | 11 | 4.0000 | 4.61 | 1920 | 53 | 8  |
| 108 | 1 | 1176 | 0 | 3 | 47 | 12 | 3.2313 | 3.35 | 2301 | 48 | 13 |
| 109 | 1 | 2058 | 0 | 1 | 44 | 12 | 3.4014 | 3.80 | 1944 | 43 | 10 |
| 110 | 1 | 900  | 0 | 4 | 36 | 12 | 1.3333 | 2.20 | 2100 | 37 | 17 |
| 111 | 1 | 215  | 2 | 0 | 31 | 17 | 9.3023 | 9.98 | 1920 | 32 | 16 |
| 112 | 1 | 2000 | 0 | 0 | 55 | 14 | 4.5000 | 4.37 | 2880 | 55 | 14 |
| 113 | 1 | 757  | 0 | 1 | 45 | 16 | 4.6235 | 4.50 | 1932 | 48 | 16 |
| 114 | 1 | 1264 | 0 | 0 | 47 | 17 | 3.9557 | 0.00 | 3234 | 48 | 17 |
| 115 | 1 | 2064 | 0 | 3 | 46 | 12 | 5.8140 | 6.00 | 2805 | 47 | 12 |
| 116 | 1 | 1280 | 0 | 0 | 49 | 11 | 0.5000 | 0.00 | 2272 | 52 | 9  |
| 117 | 1 | 1715 | 0 | 0 | 49 | 12 | 4.0816 | 3.75 | 2227 | 52 | 14 |
| 118 | 1 | 2000 | 0 | 2 | 45 | 12 | 6.0000 | 4.95 | 1720 | 49 | 6  |
| 119 | 1 | 12   | 1 | 3 | 38 | 17 | 3.6667 | 0.00 | 2300 | 38 | 13 |
| 120 | 1 | 1528 | 0 | 0 | 47 | 10 | 3.8613 | 2.95 | 3410 | 50 | 12 |
| 121 | 1 | 561  | 0 | 3 | 54 | 13 | 2.7629 | 2.53 | 2304 | 57 | 16 |
| 122 | 1 | 2058 | 0 | 0 | 41 | 11 | 2.9310 | 2.90 | 1984 | 42 | 12 |
| 123 | 1 | 1823 | 0 | 2 | 43 | 12 | 4.3884 | 4.20 | 1890 | 33 | 14 |
| 124 | 1 | 1680 | 1 | 1 | 31 | 16 | 5.4167 | 4.70 | 1970 | 32 | 12 |
| 125 | 1 | 1440 | 0 | 0 | 47 | 17 | 9.8611 | 7.10 | 2400 | 46 | 12 |
| 126 | 1 | 4950 | 0 | 2 | 35 | 12 | 0.1616 | 2.75 | 2504 | 37 | 12 |
| 127 | 1 | 1176 | 0 | 3 | 45 | 16 | 0.3826 | 3.75 | 2398 | 48 | 17 |
| 128 | 1 | 1100 | 1 | 0 | 33 | 12 | 3.6364 | 3.58 | 1960 | 39 | 12 |
| 129 | 1 | 1516 | 0 | 1 | 54 | 16 | 2.3747 | 2.40 | 2550 | 55 | 12 |
| 130 | 1 | 900  | 0 | 4 | 35 | 8  | 4.6667 | 3.95 | 2500 | 41 | 12 |
| 131 | 1 | 1080 | 1 | 2 | 31 | 12 | 1.8519 | 2.25 | 2164 | 37 | 10 |
| 132 | 1 | 480  | 0 | 0 | 55 | 12 | 5.2000 | 0.00 | 2640 | 60 | 12 |
| 133 | 1 | 288  | 0 | 2 | 34 | 12 | 3.2986 | 4.62 | 1936 | 36 | 12 |
| 134 | 1 | 1875 | 0 | 1 | 38 | 13 | 8.5333 | 8.50 | 2136 | 41 | 12 |
| 135 | 1 | 630  | 0 | 1 | 45 | 11 | 2.0635 | 0.00 | 1955 | 51 | 10 |
| 136 | 1 | 234  | 0 | 1 | 47 | 12 | 2.5641 | 2.50 | 1980 | 48 | 10 |
| 137 | 1 | 1600 | 0 | 2 | 39 | 12 | 2.1875 | 0.00 | 2550 | 42 | 11 |
| 138 | 1 | 960  | 1 | 0 | 36 | 14 | 6.2500 | 0.00 | 2058 | 37 | 13 |
| 139 | 1 | 120  | 1 | 2 | 33 | 12 | 3.3333 | 0.00 | 2263 | 32 | 14 |
| 140 | 1 | 2025 | 0 | 0 | 50 | 12 | 4.4444 | 4.80 | 1763 | 54 | 13 |

|     |   |      |   |   |    |    |         |      |      |    |    |
|-----|---|------|---|---|----|----|---------|------|------|----|----|
| 141 | 1 | 1809 | 0 | 0 | 58 | 12 | 6.6335  | 6.45 | 2096 | 59 | 14 |
| 142 | 1 | 3087 | 0 | 0 | 49 | 17 | 8.4224  | 9.98 | 2059 | 47 | 13 |
| 143 | 1 | 910  | 0 | 2 | 41 | 14 | 4.3956  | 0.00 | 1820 | 40 | 17 |
| 144 | 1 | 1840 | 0 | 1 | 51 | 12 | 2.4457  | 2.50 | 2832 | 53 | 8  |
| 145 | 1 | 784  | 0 | 0 | 53 | 9  | 1.2245  | 2.25 | 1990 | 60 | 10 |
| 146 | 1 | 400  | 1 | 2 | 36 | 12 | 1.6250  | 0.00 | 2000 | 40 | 7  |
| 147 | 1 | 1000 | 0 | 2 | 46 | 12 | 3.0000  | 5.50 | 1885 | 46 | 12 |
| 148 | 1 | 1904 | 0 | 2 | 36 | 12 | 4.7269  | 4.20 | 2860 | 37 | 12 |
| 149 | 1 | 1771 | 0 | 1 | 53 | 14 | 1.1293  | 9.98 | 1913 | 48 | 16 |
| 150 | 1 | 1486 | 0 | 3 | 40 | 16 | 7.4024  | 6.25 | 1800 | 54 | 16 |
| 151 | 1 | 740  | 0 | 2 | 42 | 17 | 4.4595  | 1.65 | 2880 | 45 | 16 |
| 152 | 1 | 1820 | 1 | 1 | 33 | 15 | 2.4725  | 0.00 | 1993 | 32 | 16 |
| 153 | 1 | 1275 | 0 | 3 | 43 | 12 | 1.8824  | 3.00 | 2250 | 47 | 14 |
| 154 | 1 | 450  | 1 | 0 | 31 | 16 | 4.0000  | 4.00 | 2286 | 30 | 16 |
| 155 | 1 | 1221 | 0 | 0 | 47 | 17 | 8.1900  | 5.99 | 1880 | 47 | 16 |
| 156 | 1 | 1550 | 0 | 0 | 54 | 17 | 7.0968  | 6.00 | 2350 | 58 | 17 |
| 157 | 1 | 180  | 1 | 3 | 33 | 12 | 1.6667  | 0.00 | 3640 | 33 | 11 |
| 158 | 1 | 2090 | 0 | 0 | 43 | 16 | 3.4450  | 3.85 | 1770 | 47 | 14 |
| 159 | 1 | 1960 | 0 | 1 | 46 | 13 | 4.2347  | 4.20 | 1875 | 49 | 13 |
| 160 | 1 | 1440 | 0 | 3 | 35 | 12 | 2.7778  | 4.10 | 2200 | 38 | 9  |
| 161 | 1 | 794  | 0 | 3 | 37 | 11 | 1.8892  | 3.85 | 2033 | 39 | 12 |
| 162 | 1 | 993  | 0 | 2 | 37 | 16 | 5.0352  | 8.30 | 2739 | 39 | 17 |
| 163 | 1 | 160  | 0 | 3 | 34 | 14 | 1.2500  | 0.00 | 1626 | 38 | 14 |
| 164 | 1 | 105  | 1 | 0 | 43 | 16 | 2.8571  | 0.00 | 2248 | 44 | 17 |
| 165 | 1 | 1200 | 0 | 0 | 46 | 12 | 4.1167  | 4.33 | 2140 | 48 | 12 |
| 166 | 1 | 450  | 0 | 3 | 35 | 9  | 1.7778  | 2.60 | 1985 | 42 | 12 |
| 167 | 1 | 996  | 0 | 0 | 46 | 17 | 13.5540 | 9.98 | 1528 | 59 | 17 |
| 168 | 1 | 1052 | 0 | 0 | 46 | 14 | 4.5627  | 4.90 | 1920 | 48 | 16 |
| 169 | 1 | 1128 | 0 | 2 | 43 | 12 | 2.1277  | 2.40 | 1918 | 46 | 10 |
| 170 | 1 | 1840 | 0 | 0 | 30 | 12 | 2.9891  | 3.75 | 2112 | 30 | 12 |
| 171 | 1 | 1910 | 0 | 2 | 41 | 11 | 2.5654  | 2.57 | 2144 | 46 | 9  |
| 172 | 1 | 980  | 0 | 1 | 54 | 12 | 5.6122  | 5.00 | 1920 | 54 | 15 |
| 173 | 1 | 2317 | 0 | 1 | 31 | 12 | 2.8054  | 3.87 | 2241 | 41 | 9  |
| 174 | 1 | 1089 | 0 | 0 | 44 | 10 | 1.6070  | 0.00 | 880  | 47 | 11 |
| 175 | 1 | 800  | 0 | 1 | 32 | 12 | 2.2500  | 0.00 | 2070 | 31 | 16 |
| 176 | 1 | 1230 | 0 | 0 | 47 | 5  | 2.0325  | 2.82 | 1050 | 53 | 5  |
| 177 | 1 | 1158 | 0 | 1 | 46 | 17 | 5.5320  | 8.10 | 2635 | 57 | 17 |
| 178 | 1 | 2272 | 0 | 0 | 37 | 11 | 1.5845  | 3.71 | 3000 | 47 | 8  |
| 179 | 1 | 528  | 0 | 2 | 51 | 12 | 3.7879  | 0.00 | 2500 | 50 | 11 |
| 180 | 1 | 1000 | 0 | 1 | 49 | 12 | 3.0000  | 0.00 | 1990 | 49 | 12 |
| 181 | 1 | 520  | 0 | 4 | 36 | 14 | 8.6538  | 0.00 | 2390 | 37 | 13 |
| 182 | 1 | 760  | 0 | 1 | 39 | 11 | 4.2105  | 3.95 | 1430 | 44 | 12 |
| 183 | 1 | 1920 | 0 | 2 | 48 | 12 | 4.6875  | 4.30 | 1800 | 50 | 8  |

|     |   |      |   |   |    |    |         |      |      |    |    |
|-----|---|------|---|---|----|----|---------|------|------|----|----|
| 184 | 1 | 1220 | 0 | 2 | 38 | 14 | 4.0984  | 4.84 | 2103 | 43 | 17 |
| 185 | 1 | 200  | 0 | 2 | 40 | 12 | 25.0000 | 3.00 | 1350 | 42 | 12 |
| 186 | 1 | 2480 | 1 | 5 | 39 | 10 | 2.6331  | 4.20 | 2880 | 36 | 17 |
| 187 | 1 | 2750 | 0 | 0 | 37 | 16 | 6.0000  | 9.00 | 2400 | 43 | 17 |
| 188 | 1 | 2014 | 0 | 1 | 49 | 13 | 5.4126  | 4.05 | 1135 | 47 | 12 |
| 189 | 1 | 1355 | 0 | 3 | 33 | 12 | 0.6642  | 1.00 | 2750 | 35 | 17 |
| 190 | 1 | 80   | 0 | 0 | 30 | 12 | 1.2500  | 0.00 | 2085 | 32 | 16 |
| 191 | 1 | 1670 | 0 | 0 | 54 | 12 | 2.2754  | 2.10 | 2600 | 56 | 8  |
| 192 | 1 | 520  | 0 | 4 | 39 | 11 | 3.4615  | 3.05 | 3542 | 40 | 12 |
| 193 | 1 | 288  | 0 | 3 | 43 | 12 | 4.1667  | 3.00 | 1975 | 43 | 12 |
| 194 | 1 | 2014 | 0 | 3 | 31 | 9  | 4.4687  | 4.26 | 2400 | 32 | 12 |
| 195 | 1 | 800  | 0 | 3 | 33 | 13 | 1.7500  | 0.00 | 3000 | 37 | 14 |
| 196 | 1 | 1984 | 0 | 3 | 40 | 12 | 3.6694  | 4.25 | 1960 | 39 | 14 |
| 197 | 1 | 1823 | 0 | 1 | 36 | 12 | 6.5826  | 6.00 | 2000 | 39 | 9  |
| 198 | 1 | 1500 | 0 | 0 | 51 | 12 | 2.6000  | 2.00 | 3000 | 51 | 12 |
| 199 | 1 | 2261 | 0 | 1 | 44 | 13 | 4.8651  | 5.50 | 2400 | 43 | 12 |
| 200 | 1 | 1728 | 0 | 3 | 42 | 16 | 5.7870  | 6.25 | 2450 | 48 | 14 |
| 201 | 1 | 1960 | 0 | 1 | 40 | 12 | 4.5408  | 5.00 | 2423 | 40 | 8  |
| 202 | 1 | 1578 | 1 | 1 | 34 | 16 | 9.5057  | 7.72 | 2000 | 33 | 16 |
| 203 | 1 | 1316 | 0 | 0 | 30 | 17 | 10.6380 | 7.00 | 2526 | 41 | 16 |
| 204 | 1 | 1530 | 0 | 0 | 54 | 12 | 1.1111  | 1.13 | 2695 | 53 | 12 |
| 205 | 1 | 2220 | 0 | 0 | 51 | 12 | 4.0541  | 4.37 | 2048 | 54 | 12 |
| 206 | 1 | 1336 | 0 | 2 | 44 | 9  | 2.6871  | 2.64 | 1920 | 46 | 11 |
| 207 | 1 | 1008 | 0 | 1 | 43 | 12 | 2.9762  | 2.50 | 2338 | 42 | 9  |
| 208 | 1 | 1944 | 0 | 1 | 34 | 12 | 3.1728  | 3.23 | 2945 | 37 | 8  |
| 209 | 1 | 2000 | 0 | 0 | 45 | 13 | 3.5500  | 3.45 | 2047 | 52 | 12 |
| 210 | 1 | 258  | 0 | 0 | 39 | 12 | 17.9070 | 0.00 | 1668 | 47 | 7  |
| 211 | 1 | 1785 | 0 | 0 | 50 | 12 | 3.4174  | 5.75 | 175  | 48 | 10 |
| 212 | 1 | 480  | 0 | 0 | 52 | 12 | 3.3333  | 0.00 | 1798 | 53 | 12 |
| 213 | 1 | 772  | 0 | 2 | 41 | 12 | 3.8860  | 7.50 | 1222 | 45 | 12 |
| 214 | 1 | 900  | 0 | 0 | 59 | 10 | 2.3111  | 2.22 | 1820 | 59 | 7  |
| 215 | 1 | 1428 | 0 | 0 | 52 | 12 | 1.7108  | 2.50 | 1560 | 60 | 8  |
| 216 | 1 | 210  | 0 | 0 | 46 | 16 | 2.1143  | 4.00 | 2210 | 49 | 12 |
| 217 | 1 | 239  | 1 | 5 | 41 | 12 | 9.9331  | 4.50 | 2874 | 48 | 16 |
| 218 | 1 | 1878 | 0 | 2 | 33 | 11 | 3.0277  | 3.50 | 2499 | 35 | 8  |
| 219 | 1 | 215  | 0 | 0 | 45 | 12 | 1.8605  | 2.30 | 3088 | 38 | 12 |
| 220 | 1 | 2340 | 1 | 2 | 36 | 10 | 0.1282  | 0.00 | 2020 | 37 | 8  |
| 221 | 1 | 1960 | 0 | 1 | 48 | 12 | 6.6327  | 6.30 | 1980 | 56 | 10 |
| 222 | 1 | 532  | 0 | 1 | 47 | 12 | 5.6391  | 3.60 | 1968 | 47 | 11 |
| 223 | 1 | 394  | 0 | 0 | 45 | 12 | 1.5990  | 2.50 | 2100 | 45 | 12 |
| 224 | 1 | 675  | 0 | 2 | 37 | 12 | 2.6667  | 3.00 | 2651 | 48 | 17 |
| 225 | 1 | 1515 | 0 | 4 | 46 | 16 | 7.9208  | 6.80 | 1918 | 49 | 14 |
| 226 | 1 | 1030 | 0 | 3 | 43 | 17 | 5.3398  | 5.80 | 2585 | 46 | 16 |

|     |   |      |   |   |    |    |         |      |      |    |    |
|-----|---|------|---|---|----|----|---------|------|------|----|----|
| 227 | 1 | 1250 | 0 | 2 | 42 | 12 | 4.0000  | 4.00 | 2250 | 46 | 17 |
| 228 | 1 | 1158 | 1 | 2 | 34 | 17 | 6.0449  | 5.10 | 2480 | 39 | 17 |
| 229 | 1 | 112  | 0 | 0 | 52 | 12 | 6.2500  | 0.00 | 2924 | 53 | 12 |
| 230 | 1 | 336  | 0 | 3 | 37 | 12 | 2.9762  | 2.20 | 1896 | 52 | 9  |
| 231 | 1 | 1984 | 0 | 1 | 37 | 12 | 4.2339  | 4.78 | 2332 | 40 | 12 |
| 232 | 1 | 716  | 0 | 0 | 52 | 8  | 3.4916  | 2.20 | 3482 | 59 | 7  |
| 233 | 1 | 1410 | 1 | 0 | 30 | 12 | 4.9645  | 1.28 | 2106 | 30 | 14 |
| 234 | 1 | 1300 | 0 | 1 | 31 | 13 | 2.7692  | 0.00 | 1160 | 32 | 12 |
| 235 | 1 | 1640 | 0 | 1 | 38 | 12 | 3.6585  | 3.25 | 2040 | 46 | 12 |
| 236 | 1 | 1202 | 0 | 3 | 43 | 12 | 5.3935  | 0.00 | 2856 | 48 | 16 |
| 237 | 1 | 489  | 0 | 1 | 49 | 8  | 0.6564  | 2.29 | 950  | 51 | 8  |
| 238 | 1 | 2076 | 0 | 0 | 55 | 12 | 4.7688  | 4.68 | 2068 | 58 | 10 |
| 239 | 1 | 526  | 0 | 2 | 38 | 17 | 8.5551  | 4.20 | 1896 | 42 | 17 |
| 240 | 1 | 1721 | 0 | 0 | 52 | 17 | 10.4590 | 9.50 | 2000 | 56 | 16 |
| 241 | 1 | 1327 | 0 | 0 | 48 | 12 | 2.6375  | 2.57 | 288  | 51 | 11 |
| 242 | 1 | 584  | 0 | 2 | 32 | 13 | 6.8493  | 4.32 | 2160 | 33 | 12 |
| 243 | 1 | 1376 | 0 | 1 | 32 | 12 | 5.0872  | 5.00 | 3120 | 33 | 17 |
| 244 | 1 | 1040 | 0 | 2 | 38 | 12 | 0.9615  | 0.00 | 1944 | 41 | 17 |
| 245 | 1 | 548  | 0 | 3 | 46 | 12 | 4.3066  | 3.69 | 2046 | 47 | 12 |
| 246 | 1 | 15   | 0 | 3 | 40 | 12 | 7.0667  | 0.00 | 2005 | 42 | 9  |
| 247 | 1 | 1980 | 0 | 4 | 31 | 9  | 2.5253  | 2.56 | 2070 | 36 | 10 |
| 248 | 1 | 1520 | 0 | 1 | 43 | 10 | 7.8947  | 5.00 | 3000 | 50 | 12 |
| 249 | 1 | 1880 | 0 | 0 | 51 | 12 | 4.1489  | 3.90 | 2640 | 51 | 12 |
| 250 | 1 | 1260 | 1 | 0 | 30 | 16 | 8.1746  | 8.17 | 2450 | 34 | 17 |
| 251 | 1 | 1092 | 0 | 0 | 52 | 13 | 9.5971  | 0.00 | 1000 | 53 | 15 |
| 252 | 1 | 1587 | 1 | 5 | 30 | 8  | 2.0164  | 2.30 | 2080 | 33 | 8  |
| 253 | 1 | 156  | 0 | 0 | 51 | 16 | 7.6218  | 0.00 | 2413 | 51 | 16 |
| 254 | 1 | 1939 | 0 | 2 | 31 | 13 | 3.1975  | 3.43 | 2570 | 31 | 12 |
| 255 | 1 | 1250 | 0 | 4 | 34 | 12 | 1.6000  | 1.36 | 2030 | 52 | 12 |
| 256 | 1 | 610  | 0 | 0 | 49 | 11 | 4.0984  | 4.00 | 4684 | 59 | 17 |
| 257 | 1 | 270  | 1 | 3 | 35 | 13 | 1.4815  | 5.00 | 2802 | 41 | 17 |
| 258 | 1 | 660  | 1 | 0 | 53 | 12 | 3.6364  | 3.15 | 2090 | 59 | 12 |
| 259 | 1 | 1000 | 0 | 3 | 32 | 12 | 1.0000  | 0.00 | 2053 | 46 | 16 |
| 260 | 1 | 1920 | 0 | 3 | 38 | 10 | 2.6042  | 2.93 | 1984 | 42 | 10 |
| 261 | 1 | 200  | 0 | 0 | 54 | 12 | 1.7500  | 0.00 | 2040 | 54 | 16 |
| 262 | 1 | 1500 | 0 | 1 | 47 | 17 | 4.8000  | 3.60 | 2794 | 58 | 8  |
| 263 | 1 | 868  | 0 | 1 | 45 | 15 | 5.5300  | 6.00 | 3290 | 47 | 14 |
| 264 | 1 | 2318 | 0 | 1 | 47 | 16 | 4.0984  | 4.20 | 1911 | 46 | 16 |
| 265 | 1 | 2000 | 0 | 0 | 59 | 10 | 1.2500  | 0.00 | 2000 | 60 | 12 |
| 266 | 1 | 60   | 0 | 1 | 32 | 11 | 1.6667  | 0.00 | 2580 | 31 | 12 |
| 267 | 1 | 1715 | 0 | 1 | 45 | 12 | 3.7901  | 3.38 | 2400 | 49 | 17 |
| 268 | 1 | 550  | 0 | 4 | 40 | 12 | 2.3636  | 2.26 | 1740 | 47 | 12 |
| 269 | 1 | 1960 | 0 | 2 | 47 | 14 | 10.2040 | 0.00 | 2500 | 50 | 12 |

|     |   |      |   |   |    |    |         |      |      |    |    |
|-----|---|------|---|---|----|----|---------|------|------|----|----|
| 270 | 1 | 44   | 1 | 2 | 36 | 16 | 6.8182  | 1.36 | 1840 | 37 | 17 |
| 271 | 1 | 1920 | 0 | 0 | 56 | 14 | 7.2146  | 6.92 | 2036 | 56 | 14 |
| 272 | 1 | 2540 | 0 | 1 | 41 | 8  | 2.4484  | 0.00 | 3536 | 43 | 11 |
| 273 | 1 | 156  | 0 | 3 | 48 | 7  | 1.1987  | 0.00 | 880  | 51 | 11 |
| 274 | 1 | 780  | 1 | 2 | 36 | 12 | 1.6410  | 0.00 | 2007 | 38 | 12 |
| 275 | 1 | 3120 | 0 | 0 | 41 | 12 | 1.7821  | 0.00 | 2632 | 44 | 13 |
| 276 | 1 | 2040 | 0 | 0 | 41 | 14 | 2.9412  | 2.80 | 2600 | 43 | 12 |
| 277 | 1 | 1610 | 0 | 3 | 36 | 12 | 4.9689  | 4.25 | 2156 | 36 | 13 |
| 278 | 1 | 215  | 0 | 3 | 37 | 12 | 1.8605  | 0.00 | 3625 | 41 | 12 |
| 279 | 1 | 1120 | 0 | 0 | 38 | 12 | 8.0357  | 0.00 | 2420 | 42 | 12 |
| 280 | 1 | 846  | 0 | 2 | 43 | 14 | 3.9716  | 4.20 | 2080 | 43 | 9  |
| 281 | 1 | 3225 | 0 | 0 | 54 | 16 | 3.0416  | 0.00 | 3443 | 59 | 17 |
| 282 | 1 | 1376 | 0 | 1 | 38 | 12 | 2.9070  | 3.75 | 2250 | 41 | 12 |
| 283 | 1 | 980  | 1 | 0 | 30 | 12 | 3.0612  | 3.60 | 2535 | 34 | 16 |
| 284 | 1 | 1838 | 0 | 0 | 49 | 12 | 4.8966  | 5.00 | 2352 | 48 | 15 |
| 285 | 1 | 1494 | 0 | 1 | 45 | 13 | 4.0161  | 2.50 | 3036 | 49 | 6  |
| 286 | 1 | 450  | 0 | 0 | 51 | 13 | 5.5556  | 3.50 | 2600 | 57 | 14 |
| 287 | 1 | 1976 | 0 | 0 | 34 | 10 | 1.2227  | 2.45 | 2223 | 39 | 7  |
| 288 | 1 | 2012 | 0 | 2 | 34 | 12 | 2.6839  | 3.61 | 2666 | 34 | 10 |
| 289 | 1 | 561  | 0 | 1 | 41 | 12 | 2.6738  | 3.25 | 2006 | 41 | 17 |
| 290 | 1 | 1715 | 0 | 1 | 49 | 12 | 9.3294  | 7.05 | 1710 | 49 | 17 |
| 291 | 1 | 1912 | 0 | 0 | 32 | 12 | 3.1381  | 3.60 | 1920 | 46 | 14 |
| 292 | 1 | 3686 | 0 | 0 | 32 | 14 | 0.5426  | 0.00 | 1647 | 39 | 14 |
| 293 | 1 | 1080 | 0 | 2 | 32 | 17 | 8.6111  | 4.65 | 3080 | 35 | 15 |
| 294 | 1 | 1799 | 0 | 0 | 47 | 10 | 3.6687  | 3.25 | 1920 | 48 | 10 |
| 295 | 1 | 1984 | 0 | 1 | 39 | 9  | 2.3185  | 2.30 | 2420 | 47 | 4  |
| 296 | 1 | 1839 | 0 | 0 | 49 | 12 | 2.8820  | 3.27 | 2205 | 53 | 15 |
| 297 | 1 | 1579 | 0 | 3 | 37 | 12 | 3.1666  | 0.00 | 3035 | 39 | 14 |
| 298 | 1 | 96   | 0 | 0 | 59 | 16 | 3.6458  | 0.00 | 2185 | 60 | 15 |
| 299 | 1 | 1920 | 0 | 0 | 50 | 12 | 6.2500  | 5.47 | 1880 | 56 | 12 |
| 300 | 1 | 1688 | 0 | 1 | 32 | 17 | 10.2490 | 9.80 | 1863 | 33 | 17 |
| 301 | 1 | 1589 | 0 | 0 | 46 | 12 | 3.2096  | 5.54 | 2456 | 48 | 16 |
| 302 | 1 | 345  | 0 | 2 | 43 | 17 | 7.6522  | 5.00 | 1847 | 46 | 17 |
| 303 | 1 | 1521 | 0 | 3 | 37 | 11 | 1.9724  | 2.30 | 2000 | 42 | 6  |
| 304 | 1 | 1490 | 0 | 2 | 32 | 16 | 4.6980  | 3.90 | 1856 | 35 | 14 |
| 305 | 1 | 989  | 0 | 1 | 39 | 11 | 2.1234  | 2.76 | 1880 | 43 | 14 |
| 306 | 1 | 600  | 0 | 2 | 34 | 13 | 2.3333  | 2.90 | 3020 | 35 | 12 |
| 307 | 1 | 2646 | 0 | 1 | 39 | 11 | 2.3896  | 0.00 | 2646 | 41 | 8  |
| 308 | 1 | 2149 | 0 | 3 | 45 | 8  | 1.2564  | 2.50 | 1640 | 48 | 9  |
| 309 | 1 | 320  | 0 | 0 | 50 | 11 | 1.0938  | 0.00 | 1950 | 54 | 11 |
| 310 | 1 | 1600 | 0 | 1 | 40 | 12 | 3.7500  | 3.30 | 1920 | 39 | 12 |
| 311 | 1 | 2419 | 0 | 1 | 30 | 10 | 3.3072  | 3.90 | 2025 | 34 | 12 |
| 312 | 1 | 2005 | 0 | 0 | 57 | 17 | 5.1352  | 5.25 | 2470 | 56 | 17 |



|     |   |      |   |   |    |    |         |      |      |    |    |
|-----|---|------|---|---|----|----|---------|------|------|----|----|
| 313 | 1 | 1960 | 0 | 1 | 39 | 12 | 6.6327  | 3.60 | 1800 | 43 | 12 |
| 314 | 1 | 2147 | 0 | 0 | 53 | 12 | 4.5645  | 4.90 | 1920 | 56 | 8  |
| 315 | 1 | 1207 | 0 | 1 | 48 | 17 | 11.8480 | 7.15 | 2039 | 53 | 17 |
| 316 | 1 | 2000 | 0 | 1 | 46 | 14 | 3.7500  | 3.75 | 2570 | 48 | 16 |
| 317 | 1 | 1260 | 0 | 0 | 47 | 12 | 4.3651  | 4.35 | 1914 | 54 | 12 |
| 318 | 1 | 90   | 0 | 1 | 43 | 12 | 3.9333  | 4.00 | 1516 | 47 | 10 |
| 319 | 1 | 1800 | 0 | 0 | 47 | 12 | 3.3333  | 3.25 | 2520 | 47 | 16 |
| 320 | 1 | 573  | 0 | 1 | 47 | 12 | 3.3159  | 2.20 | 2327 | 48 | 12 |
| 321 | 1 | 1825 | 0 | 0 | 47 | 12 | 3.5616  | 3.00 | 2188 | 50 | 12 |
| 322 | 1 | 75   | 0 | 0 | 46 | 12 | 1.6000  | 0.00 | 1864 | 48 | 12 |
| 323 | 1 | 1348 | 0 | 4 | 34 | 9  | 2.2255  | 2.30 | 2183 | 33 | 10 |
| 324 | 1 | 1880 | 0 | 0 | 48 | 10 | 4.7872  | 4.25 | 1920 | 55 | 12 |
| 325 | 1 | 1240 | 0 | 1 | 30 | 12 | 5.8065  | 6.90 | 1824 | 31 | 12 |
| 326 | 1 | 848  | 0 | 1 | 51 | 12 | 2.3585  | 2.30 | 2878 | 54 | 12 |
| 327 | 1 | 150  | 0 | 5 | 52 | 12 | 2.0000  | 0.00 | 2390 | 54 | 16 |
| 328 | 1 | 2000 | 0 | 2 | 37 | 12 | 1.9000  | 1.85 | 3120 | 39 | 13 |
| 329 | 1 | 1952 | 0 | 2 | 32 | 12 | 5.1230  | 3.25 | 2040 | 33 | 12 |
| 330 | 1 | 1456 | 0 | 2 | 36 | 17 | 5.4945  | 6.04 | 2151 | 35 | 15 |
| 331 | 1 | 1740 | 0 | 2 | 35 | 12 | 6.3218  | 5.50 | 1976 | 37 | 14 |
| 332 | 1 | 1400 | 0 | 0 | 45 | 17 | 7.1429  | 7.14 | 2286 | 51 | 16 |
| 333 | 1 | 2000 | 0 | 0 | 56 | 12 | 2.3750  | 2.70 | 2032 | 60 | 10 |
| 334 | 1 | 1750 | 0 | 2 | 40 | 10 | 2.5429  | 2.74 | 1680 | 45 | 4  |
| 335 | 1 | 1101 | 1 | 2 | 45 | 12 | 2.1798  | 2.30 | 1560 | 49 | 14 |
| 336 | 1 | 2000 | 0 | 2 | 32 | 12 | 2.6000  | 2.50 | 2895 | 30 | 12 |
| 337 | 1 | 1877 | 0 | 0 | 45 | 12 | 3.7294  | 3.60 | 1820 | 50 | 8  |
| 338 | 1 | 160  | 0 | 2 | 40 | 12 | 4.3750  | 1.85 | 2450 | 44 | 12 |
| 339 | 1 | 1886 | 0 | 1 | 38 | 12 | 4.4433  | 4.00 | 1748 | 42 | 8  |
| 340 | 1 | 1446 | 0 | 4 | 49 | 12 | 4.2877  | 4.40 | 1020 | 45 | 12 |
| 341 | 1 | 1500 | 0 | 1 | 47 | 16 | 1.6667  | 1.50 | 2342 | 49 | 17 |
| 342 | 1 | 860  | 0 | 0 | 52 | 13 | 3.2558  | 5.83 | 2250 | 53 | 12 |
| 343 | 1 | 1848 | 0 | 1 | 34 | 13 | 5.4113  | 6.00 | 2880 | 40 | 16 |
| 344 | 1 | 1678 | 0 | 2 | 44 | 12 | 2.2050  | 2.30 | 2032 | 46 | 12 |
| 345 | 1 | 160  | 0 | 3 | 36 | 16 | 4.0625  | 0.00 | 3120 | 42 | 16 |
| 346 | 1 | 108  | 0 | 0 | 50 | 17 | 0.6482  | 0.00 | 1760 | 57 | 16 |
| 347 | 1 | 1738 | 0 | 0 | 45 | 12 | 5.3826  | 6.18 | 1725 | 47 | 12 |
| 348 | 1 | 1170 | 0 | 2 | 44 | 14 | 0.1709  | 0.00 | 2080 | 46 | 13 |
| 349 | 1 | 15   | 0 | 2 | 57 | 12 | 23.4670 | 0.00 | 2040 | 57 | 10 |
| 350 | 1 | 2088 | 0 | 0 | 35 | 17 | 9.5785  | 9.98 | 2940 | 42 | 17 |
| 351 | 1 | 2490 | 0 | 0 | 46 | 12 | 3.6948  | 3.77 | 2280 | 52 | 12 |
| 352 | 1 | 135  | 2 | 1 | 30 | 14 | 2.2222  | 0.00 | 2164 | 35 | 16 |
| 353 | 1 | 1944 | 0 | 3 | 42 | 12 | 1.7490  | 2.30 | 1999 | 44 | 12 |
| 354 | 1 | 690  | 0 | 1 | 34 | 12 | 1.1594  | 2.25 | 1824 | 36 | 13 |
| 355 | 1 | 608  | 0 | 2 | 45 | 17 | 6.9901  | 3.00 | 2182 | 47 | 16 |

|     |   |      |   |   |    |    |         |      |      |    |    |
|-----|---|------|---|---|----|----|---------|------|------|----|----|
| 356 | 1 | 63   | 1 | 2 | 35 | 16 | 3.9683  | 0.00 | 2385 | 37 | 16 |
| 357 | 1 | 154  | 0 | 0 | 40 | 16 | 21.4290 | 8.13 | 2460 | 44 | 17 |
| 358 | 1 | 420  | 0 | 1 | 32 | 12 | 0.4762  | 2.85 | 2595 | 35 | 16 |
| 359 | 1 | 651  | 0 | 0 | 54 | 9  | 2.1505  | 1.44 | 2400 | 57 | 10 |
| 360 | 1 | 675  | 0 | 3 | 38 | 12 | 1.8578  | 2.20 | 3120 | 42 | 8  |
| 361 | 1 | 1663 | 0 | 3 | 43 | 12 | 4.3295  | 3.60 | 2850 | 42 | 12 |
| 362 | 1 | 1680 | 0 | 0 | 54 | 16 | 8.9286  | 7.00 | 760  | 60 | 12 |
| 363 | 1 | 180  | 0 | 3 | 39 | 14 | 2.7778  | 4.00 | 2500 | 37 | 17 |
| 364 | 1 | 1581 | 0 | 1 | 37 | 12 | 2.6565  | 3.25 | 2630 | 39 | 14 |
| 365 | 1 | 1200 | 0 | 2 | 46 | 12 | 2.5000  | 3.08 | 2597 | 48 | 8  |
| 366 | 1 | 450  | 0 | 0 | 56 | 11 | 18.2670 | 0.00 | 2760 | 60 | 11 |
| 367 | 1 | 547  | 0 | 3 | 41 | 12 | 0.8190  | 2.00 | 2070 | 44 | 8  |
| 368 | 1 | 300  | 0 | 1 | 45 | 16 | 2.0000  | 0.00 | 2256 | 48 | 16 |
| 369 | 1 | 975  | 0 | 1 | 44 | 17 | 15.3850 | 8.50 | 1505 | 47 | 16 |
| 370 | 1 | 1621 | 0 | 1 | 50 | 17 | 6.4775  | 0.00 | 2364 | 52 | 17 |
| 371 | 1 | 300  | 0 | 5 | 37 | 14 | 8.3333  | 3.50 | 2895 | 38 | 14 |
| 372 | 1 | 1868 | 0 | 1 | 44 | 12 | 4.5503  | 4.25 | 2041 | 46 | 12 |
| 373 | 1 | 1803 | 0 | 2 | 32 | 14 | 2.4958  | 1.90 | 2195 | 34 | 17 |
| 374 | 1 | 2143 | 1 | 1 | 34 | 12 | 4.4797  | 4.80 | 1935 | 40 | 12 |
| 375 | 1 | 1080 | 0 | 2 | 32 | 10 | 2.2324  | 2.30 | 1950 | 35 | 10 |
| 376 | 1 | 1352 | 0 | 3 | 37 | 12 | 2.0710  | 1.80 | 2375 | 38 | 14 |
| 377 | 1 | 537  | 0 | 1 | 44 | 13 | 1.6760  | 0.00 | 1920 | 55 | 8  |
| 378 | 1 | 352  | 0 | 2 | 34 | 16 | 3.4091  | 0.00 | 3300 | 33 | 12 |
| 379 | 1 | 200  | 1 | 3 | 33 | 12 | 2.5000  | 8.00 | 3680 | 33 | 16 |
| 380 | 1 | 2045 | 0 | 3 | 43 | 7  | 3.9609  | 4.07 | 1968 | 43 | 12 |
| 381 | 1 | 1253 | 0 | 2 | 35 | 16 | 6.2275  | 3.97 | 2504 | 33 | 10 |
| 382 | 1 | 1960 | 0 | 1 | 43 | 14 | 3.9286  | 3.85 | 2000 | 45 | 14 |
| 383 | 1 | 2000 | 0 | 0 | 34 | 12 | 2.9000  | 2.50 | 1656 | 37 | 12 |
| 384 | 1 | 1960 | 0 | 3 | 36 | 10 | 4.0816  | 4.55 | 1968 | 39 | 7  |
| 385 | 1 | 2000 | 0 | 2 | 41 | 12 | 2.8500  | 4.20 | 2016 | 41 | 12 |
| 386 | 1 | 1568 | 0 | 0 | 41 | 16 | 7.0153  | 6.31 | 2602 | 44 | 17 |
| 387 | 1 | 1225 | 0 | 3 | 35 | 10 | 2.9388  | 2.40 | 1560 | 43 | 9  |
| 388 | 1 | 780  | 1 | 3 | 32 | 12 | 1.9231  | 3.25 | 1827 | 37 | 10 |
| 389 | 1 | 480  | 0 | 0 | 30 | 14 | 6.8750  | 0.00 | 2080 | 34 | 14 |
| 390 | 1 | 1923 | 0 | 0 | 43 | 12 | 3.9002  | 4.74 | 3390 | 47 | 12 |
| 391 | 1 | 2000 | 0 | 0 | 54 | 6  | 2.0000  | 0.00 | 2524 | 57 | 6  |
| 392 | 1 | 2110 | 0 | 2 | 35 | 15 | 4.9763  | 4.37 | 2777 | 34 | 12 |
| 393 | 1 | 1664 | 0 | 0 | 50 | 12 | 1.2019  | 5.00 | 3120 | 54 | 13 |
| 394 | 1 | 48   | 1 | 1 | 34 | 17 | 22.5000 | 0.00 | 2700 | 36 | 17 |
| 395 | 1 | 1791 | 0 | 0 | 52 | 14 | 6.8677  | 6.18 | 1904 | 57 | 12 |
| 396 | 1 | 1404 | 0 | 3 | 35 | 13 | 3.5613  | 5.30 | 2360 | 38 | 14 |
| 397 | 1 | 1920 | 0 | 0 | 55 | 6  | 1.9792  | 2.58 | 1960 | 58 | 8  |
| 398 | 1 | 2141 | 0 | 0 | 35 | 16 | 5.3713  | 6.00 | 2000 | 42 | 16 |

|     |   |      |   |   |    |    |         |      |      |    |    |
|-----|---|------|---|---|----|----|---------|------|------|----|----|
| 399 | 1 | 1720 | 0 | 1 | 49 | 14 | 1.7442  | 0.00 | 2600 | 45 | 16 |
| 400 | 1 | 3533 | 2 | 2 | 38 | 15 | 5.0948  | 8.50 | 2000 | 38 | 9  |
| 401 | 1 | 2000 | 0 | 2 | 42 | 14 | 2.5000  | 0.00 | 2218 | 45 | 14 |
| 402 | 1 | 800  | 0 | 1 | 48 | 8  | 3.8250  | 2.30 | 2000 | 52 | 5  |
| 403 | 1 | 3000 | 0 | 0 | 51 | 14 | 1.0000  | 0.00 | 2595 | 53 | 16 |
| 404 | 1 | 293  | 0 | 2 | 43 | 12 | 3.0717  | 4.00 | 2400 | 47 | 12 |
| 405 | 1 | 1872 | 0 | 1 | 43 | 12 | 1.7163  | 0.00 | 2856 | 48 | 12 |
| 406 | 1 | 2058 | 0 | 1 | 38 | 12 | 4.0209  | 4.00 | 2601 | 38 | 14 |
| 407 | 1 | 1832 | 0 | 1 | 44 | 12 | 5.4585  | 4.95 | 2054 | 48 | 9  |
| 408 | 1 | 120  | 1 | 3 | 36 | 12 | 25.0000 | 9.98 | 2500 | 35 | 12 |
| 409 | 1 | 1632 | 0 | 0 | 38 | 12 | 2.3897  | 2.30 | 1960 | 31 | 12 |
| 410 | 1 | 778  | 0 | 0 | 47 | 8  | 3.2134  | 7.25 | 2058 | 51 | 8  |
| 411 | 1 | 1984 | 0 | 2 | 34 | 12 | 3.3770  | 3.14 | 2410 | 49 | 10 |
| 412 | 1 | 225  | 1 | 2 | 40 | 17 | 1.7778  | 0.00 | 1278 | 38 | 17 |
| 413 | 1 | 1960 | 0 | 1 | 31 | 12 | 3.1633  | 3.18 | 2875 | 35 | 12 |
| 414 | 1 | 444  | 0 | 0 | 46 | 12 | 2.7027  | 0.00 | 2340 | 49 | 12 |
| 415 | 1 | 384  | 0 | 3 | 36 | 14 | 1.6927  | 0.00 | 3060 | 43 | 17 |
| 416 | 1 | 1170 | 1 | 2 | 39 | 13 | 0.2137  | 0.00 | 1920 | 47 | 12 |
| 417 | 1 | 1330 | 0 | 2 | 36 | 17 | 6.7669  | 4.50 | 3390 | 38 | 12 |
| 418 | 1 | 1350 | 0 | 4 | 37 | 8  | 1.7407  | 2.10 | 2400 | 41 | 12 |
| 419 | 1 | 480  | 0 | 4 | 39 | 12 | 2.5000  | 0.00 | 1640 | 40 | 11 |
| 420 | 1 | 1984 | 1 | 3 | 36 | 11 | 4.4859  | 3.26 | 1656 | 38 | 8  |
| 421 | 1 | 1944 | 0 | 2 | 49 | 12 | 2.5720  | 2.70 | 1920 | 53 | 16 |
| 422 | 1 | 50   | 1 | 1 | 45 | 12 | 3.4600  | 5.00 | 1780 | 46 | 10 |
| 423 | 1 | 460  | 2 | 0 | 32 | 17 | 4.7826  | 0.00 | 1850 | 31 | 17 |
| 424 | 1 | 680  | 0 | 5 | 36 | 10 | 2.3118  | 0.00 | 3430 | 43 | 12 |
| 425 | 1 | 2450 | 0 | 1 | 40 | 12 | 5.3061  | 6.50 | 2008 | 40 | 8  |
| 426 | 1 | 2144 | 0 | 2 | 43 | 13 | 5.8675  | 0.00 | 2140 | 43 | 11 |
| 427 | 1 | 1760 | 0 | 1 | 33 | 12 | 3.4091  | 3.21 | 3380 | 34 | 12 |
| 428 | 1 | 490  | 0 | 1 | 30 | 12 | 4.0816  | 2.46 | 2430 | 33 | 11 |
| 429 | 0 | 0    | 0 | 1 | 49 | 12 | NA      | 0.00 | 2550 | 54 | 15 |
| 430 | 0 | 0    | 2 | 0 | 30 | 16 | NA      | 0.00 | 1928 | 34 | 16 |
| 431 | 0 | 0    | 1 | 0 | 30 | 12 | NA      | 0.00 | 1100 | 39 | 17 |
| 432 | 0 | 0    | 0 | 4 | 41 | 12 | NA      | 0.00 | 3193 | 40 | 16 |
| 433 | 0 | 0    | 0 | 1 | 45 | 12 | NA      | 0.00 | 2250 | 46 | 16 |
| 434 | 0 | 0    | 0 | 5 | 43 | 12 | NA      | 0.00 | 2012 | 44 | 13 |
| 435 | 0 | 0    | 0 | 1 | 42 | 13 | NA      | 0.00 | 3856 | 46 | 15 |
| 436 | 0 | 0    | 0 | 0 | 60 | 12 | NA      | 0.00 | 1645 | 58 | 12 |
| 437 | 0 | 0    | 0 | 0 | 57 | 12 | NA      | 0.00 | 1554 | 57 | 12 |
| 438 | 0 | 0    | 0 | 2 | 38 | 10 | NA      | 0.00 | 2352 | 41 | 8  |
| 439 | 0 | 0    | 0 | 0 | 56 | 12 | NA      | 0.00 | 1980 | 58 | 12 |
| 440 | 0 | 0    | 0 | 3 | 32 | 12 | NA      | 0.00 | 2352 | 37 | 7  |
| 441 | 0 | 0    | 0 | 1 | 49 | 7  | NA      | 0.00 | 1784 | 58 | 6  |

|     |   |   |   |   |    |    |    |      |      |    |    |
|-----|---|---|---|---|----|----|----|------|------|----|----|
| 442 | 0 | 0 | 0 | 0 | 55 | 12 | NA | 0.00 | 2500 | 58 | 12 |
| 443 | 0 | 0 | 1 | 1 | 36 | 9  | NA | 0.00 | 2088 | 39 | 14 |
| 444 | 0 | 0 | 0 | 3 | 44 | 12 | NA | 0.00 | 4640 | 50 | 12 |
| 445 | 0 | 0 | 0 | 1 | 44 | 10 | NA | 0.00 | 3900 | 60 | 12 |
| 446 | 0 | 0 | 1 | 2 | 35 | 14 | NA | 0.00 | 1988 | 34 | 17 |
| 447 | 0 | 0 | 2 | 3 | 44 | 14 | NA | 0.00 | 1920 | 45 | 10 |
| 448 | 0 | 0 | 0 | 1 | 45 | 12 | NA | 0.00 | 2400 | 45 | 12 |
| 449 | 0 | 0 | 1 | 0 | 34 | 12 | NA | 0.00 | 1867 | 38 | 12 |
| 450 | 0 | 0 | 2 | 0 | 30 | 17 | NA | 0.00 | 3570 | 32 | 17 |
| 451 | 0 | 0 | 0 | 1 | 39 | 8  | NA | 0.00 | 2805 | 44 | 12 |
| 452 | 0 | 0 | 0 | 2 | 36 | 12 | NA | 0.00 | 1110 | 39 | 15 |
| 453 | 0 | 0 | 0 | 2 | 38 | 17 | NA | 0.00 | 2695 | 42 | 16 |
| 454 | 0 | 0 | 0 | 0 | 53 | 12 | NA | 0.00 | 1950 | 54 | 16 |
| 455 | 0 | 0 | 0 | 2 | 36 | 12 | NA | 0.00 | 2128 | 42 | 12 |
| 456 | 0 | 0 | 1 | 1 | 32 | 12 | NA | 0.00 | 3260 | 31 | 12 |
| 457 | 0 | 0 | 0 | 3 | 51 | 9  | NA | 0.00 | 1987 | 51 | 12 |
| 458 | 0 | 0 | 0 | 0 | 38 | 11 | NA | 0.00 | 2185 | 46 | 11 |
| 459 | 0 | 0 | 2 | 0 | 33 | 12 | NA | 0.00 | 2475 | 36 | 12 |
| 460 | 0 | 0 | 0 | 0 | 54 | 12 | NA | 0.00 | 2610 | 53 | 12 |
| 461 | 0 | 0 | 0 | 3 | 38 | 9  | NA | 0.00 | 1920 | 44 | 12 |
| 462 | 0 | 0 | 2 | 2 | 30 | 11 | NA | 0.00 | 2352 | 31 | 14 |
| 463 | 0 | 0 | 2 | 3 | 34 | 12 | NA | 0.00 | 3160 | 30 | 12 |
| 464 | 0 | 0 | 0 | 1 | 34 | 9  | NA | 0.00 | 1040 | 37 | 13 |
| 465 | 0 | 0 | 0 | 2 | 50 | 12 | NA | 0.00 | 3120 | 49 | 12 |
| 466 | 0 | 0 | 2 | 0 | 30 | 17 | NA | 0.00 | 2240 | 30 | 16 |
| 467 | 0 | 0 | 0 | 2 | 38 | 12 | NA | 0.00 | 1980 | 42 | 16 |
| 468 | 0 | 0 | 0 | 0 | 54 | 14 | NA | 0.00 | 1960 | 58 | 14 |
| 469 | 0 | 0 | 1 | 2 | 30 | 12 | NA | 3.00 | 2940 | 31 | 17 |
| 470 | 0 | 0 | 0 | 0 | 55 | 12 | NA | 0.00 | 2467 | 56 | 11 |
| 471 | 0 | 0 | 0 | 1 | 51 | 10 | NA | 0.00 | 2256 | 56 | 12 |
| 472 | 0 | 0 | 0 | 1 | 44 | 12 | NA | 0.00 | 1680 | 46 | 12 |
| 473 | 0 | 0 | 0 | 0 | 53 | 12 | NA | 0.00 | 2250 | 55 | 12 |
| 474 | 0 | 0 | 0 | 2 | 42 | 10 | NA | 0.00 | 2400 | 49 | 9  |
| 475 | 0 | 0 | 0 | 2 | 38 | 12 | NA | 0.00 | 2196 | 42 | 11 |
| 476 | 0 | 0 | 1 | 3 | 38 | 13 | NA | 0.00 | 2400 | 40 | 12 |
| 477 | 0 | 0 | 1 | 4 | 41 | 12 | NA | 0.00 | 3825 | 41 | 11 |
| 478 | 0 | 0 | 0 | 3 | 35 | 8  | NA | 0.00 | 2860 | 44 | 9  |
| 479 | 0 | 0 | 1 | 2 | 33 | 12 | NA | 2.75 | 2750 | 34 | 12 |
| 480 | 0 | 0 | 0 | 0 | 48 | 13 | NA | 0.00 | 2103 | 50 | 16 |
| 481 | 0 | 0 | 0 | 0 | 47 | 12 | NA | 0.00 | 1880 | 51 | 12 |
| 482 | 0 | 0 | 0 | 5 | 34 | 12 | NA | 0.00 | 3185 | 41 | 13 |
| 483 | 0 | 0 | 2 | 1 | 33 | 13 | NA | 0.00 | 2677 | 37 | 17 |
| 484 | 0 | 0 | 3 | 1 | 31 | 13 | NA | 0.00 | 3600 | 36 | 17 |

|     |   |   |   |   |    |    |    |      |      |    |    |
|-----|---|---|---|---|----|----|----|------|------|----|----|
| 485 | 0 | 0 | 0 | 0 | 58 | 8  | NA | 0.00 | 4334 | 58 | 8  |
| 486 | 0 | 0 | 0 | 0 | 49 | 12 | NA | 0.00 | 2874 | 52 | 8  |
| 487 | 0 | 0 | 0 | 1 | 55 | 8  | NA | 0.00 | 1936 | 56 | 9  |
| 488 | 0 | 0 | 0 | 0 | 44 | 14 | NA | 1.50 | 1964 | 49 | 8  |
| 489 | 0 | 0 | 0 | 0 | 44 | 9  | NA | 0.00 | 1900 | 48 | 8  |
| 490 | 0 | 0 | 0 | 3 | 36 | 16 | NA | 0.00 | 2500 | 37 | 17 |
| 491 | 0 | 0 | 0 | 3 | 38 | 12 | NA | 0.00 | 3173 | 46 | 14 |
| 492 | 0 | 0 | 0 | 3 | 37 | 16 | NA | 0.00 | 2916 | 38 | 17 |
| 493 | 0 | 0 | 0 | 0 | 47 | 12 | NA | 0.00 | 2208 | 51 | 12 |
| 494 | 0 | 0 | 0 | 3 | 47 | 12 | NA | 0.00 | 2094 | 47 | 10 |
| 495 | 0 | 0 | 1 | 1 | 32 | 12 | NA | 0.00 | 2250 | 33 | 12 |
| 496 | 0 | 0 | 1 | 2 | 43 | 12 | NA | 0.00 | 2000 | 46 | 12 |
| 497 | 0 | 0 | 1 | 4 | 42 | 11 | NA | 0.00 | 2600 | 48 | 10 |
| 498 | 0 | 0 | 0 | 0 | 56 | 12 | NA | 0.00 | 4368 | 57 | 8  |
| 499 | 0 | 0 | 0 | 5 | 38 | 13 | NA | 2.25 | 3068 | 40 | 16 |
| 500 | 0 | 0 | 0 | 2 | 52 | 12 | NA | 0.00 | 2218 | 51 | 11 |
| 501 | 0 | 0 | 0 | 0 | 50 | 12 | NA | 0.00 | 1848 | 56 | 12 |
| 502 | 0 | 0 | 0 | 0 | 33 | 16 | NA | 0.00 | 2430 | 33 | 17 |
| 503 | 0 | 0 | 0 | 2 | 44 | 16 | NA | 0.00 | 2640 | 44 | 17 |
| 504 | 0 | 0 | 0 | 1 | 41 | 12 | NA | 0.00 | 2108 | 42 | 16 |
| 505 | 0 | 0 | 0 | 1 | 45 | 12 | NA | 0.00 | 1998 | 45 | 12 |
| 506 | 0 | 0 | 0 | 0 | 53 | 14 | NA | 0.00 | 2500 | 55 | 16 |
| 507 | 0 | 0 | 0 | 0 | 53 | 14 | NA | 0.00 | 1665 | 56 | 17 |
| 508 | 0 | 0 | 0 | 1 | 42 | 12 | NA | 0.00 | 2990 | 46 | 12 |
| 509 | 0 | 0 | 2 | 0 | 32 | 13 | NA | 0.00 | 1795 | 35 | 16 |
| 510 | 0 | 0 | 0 | 0 | 56 | 12 | NA | 0.00 | 2500 | 53 | 12 |
| 511 | 0 | 0 | 1 | 3 | 37 | 11 | NA | 0.00 | 2205 | 40 | 11 |
| 512 | 0 | 0 | 1 | 2 | 40 | 12 | NA | 0.00 | 2460 | 42 | 14 |
| 513 | 0 | 0 | 0 | 3 | 54 | 15 | NA | 0.00 | 1880 | 55 | 16 |
| 514 | 0 | 0 | 0 | 0 | 53 | 7  | NA | 0.00 | 3481 | 53 | 9  |
| 515 | 0 | 0 | 0 | 1 | 48 | 12 | NA | 0.00 | 2450 | 51 | 12 |
| 516 | 0 | 0 | 1 | 2 | 36 | 12 | NA | 0.00 | 2062 | 38 | 14 |
| 517 | 0 | 0 | 0 | 0 | 57 | 12 | NA | 0.00 | 2146 | 52 | 14 |
| 518 | 0 | 0 | 0 | 0 | 51 | 12 | NA | 0.00 | 1575 | 49 | 7  |
| 519 | 0 | 0 | 0 | 4 | 33 | 13 | NA | 0.00 | 3096 | 37 | 12 |
| 520 | 0 | 0 | 0 | 0 | 52 | 12 | NA | 0.00 | 3280 | 49 | 11 |
| 521 | 0 | 0 | 0 | 0 | 56 | 10 | NA | 0.00 | 1680 | 60 | 8  |
| 522 | 0 | 0 | 1 | 2 | 36 | 12 | NA | 0.00 | 2625 | 38 | 11 |
| 523 | 0 | 0 | 1 | 0 | 36 | 14 | NA | 0.00 | 1846 | 50 | 16 |
| 524 | 0 | 0 | 0 | 1 | 46 | 12 | NA | 0.00 | 2178 | 47 | 10 |
| 525 | 0 | 0 | 0 | 3 | 31 | 10 | NA | 0.00 | 960  | 33 | 9  |
| 526 | 0 | 0 | 0 | 0 | 52 | 11 | NA | 0.00 | 2210 | 51 | 12 |
| 527 | 0 | 0 | 0 | 2 | 46 | 12 | NA | 0.00 | 2192 | 55 | 12 |

|     |   |   |   |   |    |    |    |      |      |    |    |
|-----|---|---|---|---|----|----|----|------|------|----|----|
| 528 | 0 | 0 | 2 | 0 | 35 | 12 | NA | 0.00 | 1960 | 44 | 16 |
| 529 | 0 | 0 | 0 | 0 | 59 | 12 | NA | 0.00 | 1920 | 56 | 10 |
| 530 | 0 | 0 | 0 | 1 | 36 | 8  | NA | 0.00 | 2286 | 40 | 12 |
| 531 | 0 | 0 | 1 | 3 | 51 | 7  | NA | 0.00 | 2000 | 52 | 7  |
| 532 | 0 | 0 | 1 | 0 | 31 | 16 | NA | 0.00 | 2256 | 31 | 12 |
| 533 | 0 | 0 | 0 | 2 | 31 | 14 | NA | 0.00 | 2370 | 36 | 17 |
| 534 | 0 | 0 | 1 | 1 | 32 | 12 | NA | 0.00 | 1800 | 39 | 13 |
| 535 | 0 | 0 | 1 | 2 | 35 | 16 | NA | 0.00 | 2250 | 38 | 16 |
| 536 | 0 | 0 | 0 | 3 | 40 | 12 | NA | 4.10 | 1080 | 43 | 12 |
| 537 | 0 | 0 | 1 | 2 | 33 | 10 | NA | 0.00 | 2840 | 38 | 12 |
| 538 | 0 | 0 | 0 | 0 | 54 | 7  | NA | 0.00 | 2250 | 52 | 11 |
| 539 | 0 | 0 | 1 | 1 | 36 | 12 | NA | 0.00 | 2746 | 37 | 12 |
| 540 | 0 | 0 | 0 | 1 | 50 | 10 | NA | 0.00 | 2300 | 60 | 8  |
| 541 | 0 | 0 | 0 | 0 | 54 | 8  | NA | 0.00 | 2860 | 49 | 8  |
| 542 | 0 | 0 | 0 | 1 | 48 | 11 | NA | 0.00 | 1765 | 49 | 12 |
| 543 | 0 | 0 | 0 | 4 | 41 | 15 | NA | 0.00 | 2520 | 42 | 16 |
| 544 | 0 | 0 | 0 | 4 | 50 | 12 | NA | 0.00 | 2208 | 53 | 12 |
| 545 | 0 | 0 | 0 | 2 | 46 | 12 | NA | 0.00 | 2119 | 51 | 8  |
| 546 | 0 | 0 | 0 | 1 | 42 | 13 | NA | 0.00 | 2580 | 47 | 17 |
| 547 | 0 | 0 | 1 | 2 | 31 | 9  | NA | 0.00 | 1984 | 34 | 12 |
| 548 | 0 | 0 | 0 | 0 | 53 | 12 | NA | 0.00 | 1880 | 58 | 8  |
| 549 | 0 | 0 | 0 | 1 | 51 | 12 | NA | 0.00 | 2185 | 57 | 12 |
| 550 | 0 | 0 | 0 | 1 | 47 | 12 | NA | 0.00 | 2080 | 57 | 12 |
| 551 | 0 | 0 | 0 | 1 | 50 | 12 | NA | 0.00 | 1920 | 50 | 12 |
| 552 | 0 | 0 | 0 | 1 | 37 | 6  | NA | 0.00 | 3000 | 52 | 5  |
| 553 | 0 | 0 | 2 | 2 | 30 | 12 | NA | 0.00 | 2100 | 31 | 12 |
| 554 | 0 | 0 | 0 | 0 | 49 | 12 | NA | 0.00 | 1690 | 39 | 12 |
| 555 | 0 | 0 | 0 | 2 | 52 | 12 | NA | 0.00 | 2600 | 49 | 16 |
| 556 | 0 | 0 | 0 | 2 | 47 | 12 | NA | 0.00 | 1984 | 49 | 16 |
| 557 | 0 | 0 | 0 | 0 | 49 | 12 | NA | 0.00 | 2064 | 53 | 12 |
| 558 | 0 | 0 | 0 | 4 | 44 | 12 | NA | 0.00 | 2553 | 31 | 16 |
| 559 | 0 | 0 | 0 | 0 | 53 | 8  | NA | 0.00 | 2776 | 59 | 9  |
| 560 | 0 | 0 | 1 | 0 | 30 | 12 | NA | 0.00 | 2315 | 31 | 13 |
| 561 | 0 | 0 | 0 | 2 | 54 | 12 | NA | 0.00 | 1880 | 55 | 12 |
| 562 | 0 | 0 | 1 | 1 | 47 | 7  | NA | 0.00 | 2160 | 51 | 7  |
| 563 | 0 | 0 | 0 | 0 | 56 | 15 | NA | 0.00 | 900  | 56 | 12 |
| 564 | 0 | 0 | 0 | 1 | 49 | 12 | NA | 0.00 | 2467 | 52 | 16 |
| 565 | 0 | 0 | 0 | 0 | 48 | 6  | NA | 0.00 | 1820 | 55 | 12 |
| 566 | 0 | 0 | 0 | 1 | 49 | 12 | NA | 0.00 | 2223 | 53 | 10 |
| 567 | 0 | 0 | 0 | 1 | 56 | 12 | NA | 0.00 | 2142 | 60 | 12 |
| 568 | 0 | 0 | 0 | 0 | 46 | 12 | NA | 0.00 | 1928 | 46 | 11 |
| 569 | 0 | 0 | 0 | 2 | 45 | 12 | NA | 0.00 | 2783 | 49 | 17 |
| 570 | 0 | 0 | 0 | 2 | 32 | 12 | NA | 0.00 | 1960 | 35 | 12 |

|     |   |   |   |   |    |    |    |      |      |    |    |
|-----|---|---|---|---|----|----|----|------|------|----|----|
| 571 | 0 | 0 | 1 | 1 | 43 | 12 | NA | 2.70 | 1920 | 41 | 12 |
| 572 | 0 | 0 | 1 | 1 | 34 | 12 | NA | 0.00 | 1587 | 39 | 12 |
| 573 | 0 | 0 | 1 | 1 | 30 | 12 | NA | 0.00 | 2496 | 51 | 10 |
| 574 | 0 | 0 | 2 | 0 | 38 | 17 | NA | 4.80 | 2280 | 39 | 12 |
| 575 | 0 | 0 | 1 | 1 | 33 | 16 | NA | 0.00 | 2750 | 36 | 17 |
| 576 | 0 | 0 | 0 | 0 | 52 | 12 | NA | 0.00 | 2115 | 55 | 12 |
| 577 | 0 | 0 | 0 | 3 | 43 | 11 | NA | 0.00 | 2590 | 45 | 12 |
| 578 | 0 | 0 | 1 | 1 | 33 | 12 | NA | 0.00 | 2372 | 34 | 12 |
| 579 | 0 | 0 | 0 | 0 | 45 | 10 | NA | 0.00 | 2295 | 48 | 12 |
| 580 | 0 | 0 | 2 | 1 | 36 | 10 | NA | 0.00 | 2096 | 38 | 12 |
| 581 | 0 | 0 | 1 | 1 | 34 | 12 | NA | 0.00 | 3315 | 39 | 17 |
| 582 | 0 | 0 | 0 | 2 | 37 | 14 | NA | 0.00 | 1777 | 50 | 16 |
| 583 | 0 | 0 | 0 | 1 | 46 | 10 | NA | 0.00 | 1880 | 51 | 12 |
| 584 | 0 | 0 | 0 | 0 | 47 | 12 | NA | 0.00 | 2184 | 55 | 10 |
| 585 | 0 | 0 | 2 | 1 | 31 | 16 | NA | 0.00 | 3250 | 32 | 16 |
| 586 | 0 | 0 | 0 | 0 | 57 | 5  | NA | 0.00 | 1520 | 58 | 5  |
| 587 | 0 | 0 | 1 | 1 | 30 | 12 | NA | 0.00 | 3119 | 30 | 13 |
| 588 | 0 | 0 | 0 | 0 | 30 | 12 | NA | 0.00 | 640  | 43 | 17 |
| 589 | 0 | 0 | 0 | 3 | 44 | 12 | NA | 0.00 | 2250 | 45 | 12 |
| 590 | 0 | 0 | 0 | 0 | 53 | 13 | NA | 0.00 | 3000 | 53 | 13 |
| 591 | 0 | 0 | 0 | 0 | 51 | 8  | NA | 0.00 | 2028 | 54 | 8  |
| 592 | 0 | 0 | 1 | 3 | 39 | 12 | NA | 0.00 | 2412 | 36 | 14 |
| 593 | 0 | 0 | 0 | 0 | 52 | 8  | NA | 0.00 | 2452 | 54 | 12 |
| 594 | 0 | 0 | 0 | 4 | 46 | 8  | NA | 0.00 | 2304 | 50 | 12 |
| 595 | 0 | 0 | 0 | 5 | 47 | 12 | NA | 0.00 | 3120 | 49 | 12 |
| 596 | 0 | 0 | 0 | 2 | 52 | 8  | NA | 0.00 | 1670 | 54 | 8  |
| 597 | 0 | 0 | 0 | 2 | 45 | 12 | NA | 0.00 | 2137 | 46 | 15 |
| 598 | 0 | 0 | 0 | 0 | 60 | 11 | NA | 0.00 | 2071 | 52 | 11 |
| 599 | 0 | 0 | 0 | 2 | 41 | 13 | NA | 0.00 | 1960 | 54 | 7  |
| 600 | 0 | 0 | 0 | 3 | 39 | 8  | NA | 0.00 | 2068 | 45 | 12 |
| 601 | 0 | 0 | 0 | 1 | 49 | 12 | NA | 0.00 | 2190 | 51 | 12 |
| 602 | 0 | 0 | 1 | 1 | 32 | 15 | NA | 0.00 | 2295 | 37 | 13 |
| 603 | 0 | 0 | 1 | 3 | 33 | 12 | NA | 0.00 | 2970 | 34 | 13 |
| 604 | 0 | 0 | 0 | 4 | 36 | 10 | NA | 0.00 | 2068 | 37 | 8  |
| 605 | 0 | 0 | 3 | 3 | 37 | 13 | NA | 0.00 | 2419 | 39 | 14 |
| 606 | 0 | 0 | 1 | 2 | 30 | 12 | NA | 0.00 | 2150 | 34 | 11 |
| 607 | 0 | 0 | 1 | 1 | 44 | 11 | NA | 0.00 | 1152 | 37 | 10 |
| 608 | 0 | 0 | 0 | 1 | 48 | 12 | NA | 0.00 | 2640 | 49 | 12 |
| 609 | 0 | 0 | 0 | 4 | 40 | 11 | NA | 0.00 | 2550 | 45 | 11 |
| 610 | 0 | 0 | 0 | 0 | 47 | 13 | NA | 0.00 | 1360 | 49 | 16 |
| 611 | 0 | 0 | 0 | 2 | 36 | 12 | NA | 0.00 | 2420 | 40 | 12 |
| 612 | 0 | 0 | 0 | 2 | 40 | 11 | NA | 0.00 | 2205 | 42 | 14 |
| 613 | 0 | 0 | 0 | 1 | 46 | 12 | NA | 0.00 | 3268 | 46 | 12 |

|     |   |   |   |   |    |    |    |      |      |    |    |
|-----|---|---|---|---|----|----|----|------|------|----|----|
| 614 | 0 | 0 | 0 | 0 | 52 | 12 | NA | 0.00 | 3672 | 54 | 12 |
| 615 | 0 | 0 | 0 | 1 | 44 | 12 | NA | 0.00 | 1800 | 45 | 12 |
| 616 | 0 | 0 | 0 | 1 | 45 | 10 | NA | 0.00 | 1926 | 46 | 14 |
| 617 | 0 | 0 | 2 | 1 | 30 | 7  | NA | 0.00 | 1920 | 35 | 7  |
| 618 | 0 | 0 | 1 | 3 | 40 | 12 | NA | 0.00 | 2080 | 44 | 12 |
| 619 | 0 | 0 | 0 | 1 | 43 | 12 | NA | 0.00 | 2856 | 43 | 12 |
| 620 | 0 | 0 | 0 | 2 | 49 | 12 | NA | 0.00 | 2115 | 53 | 10 |
| 621 | 0 | 0 | 1 | 4 | 46 | 12 | NA | 3.45 | 1880 | 48 | 12 |
| 622 | 0 | 0 | 0 | 0 | 52 | 11 | NA | 0.00 | 2000 | 52 | 12 |
| 623 | 0 | 0 | 1 | 1 | 31 | 12 | NA | 0.00 | 2044 | 33 | 15 |
| 624 | 0 | 0 | 1 | 1 | 42 | 10 | NA | 0.00 | 1677 | 47 | 11 |
| 625 | 0 | 0 | 0 | 3 | 33 | 11 | NA | 0.00 | 2184 | 38 | 8  |
| 626 | 0 | 0 | 0 | 0 | 57 | 16 | NA | 0.00 | 3185 | 57 | 13 |
| 627 | 0 | 0 | 0 | 0 | 49 | 10 | NA | 0.00 | 2680 | 51 | 10 |
| 628 | 0 | 0 | 0 | 1 | 45 | 14 | NA | 0.00 | 3615 | 47 | 14 |
| 629 | 0 | 0 | 0 | 0 | 56 | 11 | NA | 0.00 | 2139 | 56 | 12 |
| 630 | 0 | 0 | 1 | 3 | 41 | 12 | NA | 0.00 | 3080 | 43 | 12 |
| 631 | 0 | 0 | 0 | 0 | 56 | 5  | NA | 0.00 | 1261 | 53 | 6  |
| 632 | 0 | 0 | 0 | 1 | 48 | 10 | NA | 0.00 | 2227 | 48 | 10 |
| 633 | 0 | 0 | 0 | 2 | 52 | 16 | NA | 0.00 | 1920 | 53 | 16 |
| 634 | 0 | 0 | 0 | 0 | 51 | 12 | NA | 0.00 | 2350 | 55 | 12 |
| 635 | 0 | 0 | 0 | 3 | 35 | 11 | NA | 0.00 | 1785 | 39 | 10 |
| 636 | 0 | 0 | 0 | 0 | 45 | 12 | NA | 0.00 | 2598 | 51 | 12 |
| 637 | 0 | 0 | 0 | 0 | 54 | 12 | NA | 0.00 | 2455 | 58 | 17 |
| 638 | 0 | 0 | 0 | 2 | 54 | 12 | NA | 0.00 | 2450 | 54 | 13 |
| 639 | 0 | 0 | 1 | 0 | 31 | 12 | NA | 0.00 | 1218 | 32 | 8  |
| 640 | 0 | 0 | 0 | 3 | 53 | 6  | NA | 0.00 | 2040 | 54 | 4  |
| 641 | 0 | 0 | 2 | 2 | 35 | 14 | NA | 0.00 | 2600 | 34 | 14 |
| 642 | 0 | 0 | 1 | 3 | 36 | 12 | NA | 0.00 | 2450 | 40 | 16 |
| 643 | 0 | 0 | 0 | 0 | 59 | 12 | NA | 0.00 | 2717 | 60 | 12 |
| 644 | 0 | 0 | 0 | 0 | 54 | 16 | NA | 0.00 | 2701 | 54 | 17 |
| 645 | 0 | 0 | 1 | 1 | 37 | 12 | NA | 0.00 | 2600 | 47 | 17 |
| 646 | 0 | 0 | 0 | 0 | 44 | 12 | NA | 0.00 | 3640 | 54 | 10 |
| 647 | 0 | 0 | 1 | 2 | 34 | 17 | NA | 0.00 | 2940 | 40 | 16 |
| 648 | 0 | 0 | 0 | 0 | 49 | 12 | NA | 0.00 | 1880 | 50 | 12 |
| 649 | 0 | 0 | 0 | 0 | 49 | 12 | NA | 0.00 | 3500 | 51 | 12 |
| 650 | 0 | 0 | 0 | 0 | 60 | 9  | NA | 0.00 | 3320 | 60 | 8  |
| 651 | 0 | 0 | 0 | 0 | 51 | 12 | NA | 0.00 | 1605 | 55 | 12 |
| 652 | 0 | 0 | 1 | 1 | 30 | 12 | NA | 0.00 | 2500 | 30 | 14 |
| 653 | 0 | 0 | 0 | 2 | 47 | 12 | NA | 0.00 | 2400 | 49 | 9  |
| 654 | 0 | 0 | 0 | 4 | 36 | 12 | NA | 0.00 | 1634 | 45 | 17 |
| 655 | 0 | 0 | 1 | 3 | 35 | 12 | NA | 0.00 | 2260 | 38 | 12 |
| 656 | 0 | 0 | 0 | 0 | 58 | 12 | NA | 0.00 | 3478 | 53 | 12 |



|     |   |   |   |   |    |    |    |      |      |    |    |
|-----|---|---|---|---|----|----|----|------|------|----|----|
| 657 | 0 | 0 | 1 | 3 | 41 | 14 | NA | 0.00 | 2550 | 42 | 16 |
| 658 | 0 | 0 | 0 | 1 | 51 | 10 | NA | 0.00 | 840  | 52 | 8  |
| 659 | 0 | 0 | 0 | 0 | 47 | 12 | NA | 0.00 | 1520 | 52 | 12 |
| 660 | 0 | 0 | 1 | 2 | 45 | 9  | NA | 0.00 | 1920 | 35 | 9  |
| 661 | 0 | 0 | 0 | 0 | 60 | 14 | NA | 0.00 | 2703 | 55 | 17 |
| 662 | 0 | 0 | 1 | 1 | 30 | 16 | NA | 2.00 | 1896 | 46 | 16 |
| 663 | 0 | 0 | 0 | 0 | 55 | 11 | NA | 0.00 | 1960 | 57 | 13 |
| 664 | 0 | 0 | 1 | 2 | 32 | 12 | NA | 0.00 | 3060 | 50 | 8  |
| 665 | 0 | 0 | 0 | 2 | 36 | 12 | NA | 0.00 | 2805 | 38 | 12 |
| 666 | 0 | 0 | 0 | 0 | 55 | 12 | NA | 0.00 | 1944 | 53 | 7  |
| 667 | 0 | 0 | 0 | 0 | 47 | 12 | NA | 0.00 | 1960 | 47 | 12 |
| 668 | 0 | 0 | 0 | 1 | 47 | 12 | NA | 0.00 | 2112 | 52 | 8  |
| 669 | 0 | 0 | 0 | 1 | 37 | 11 | NA | 0.00 | 2544 | 39 | 12 |
| 670 | 0 | 0 | 0 | 2 | 50 | 12 | NA | 0.00 | 1700 | 53 | 17 |
| 671 | 0 | 0 | 0 | 3 | 30 | 12 | NA | 0.00 | 2550 | 31 | 12 |
| 672 | 0 | 0 | 0 | 1 | 48 | 17 | NA | 0.00 | 2080 | 45 | 17 |
| 673 | 0 | 0 | 0 | 2 | 43 | 10 | NA | 0.00 | 2060 | 49 | 12 |
| 674 | 0 | 0 | 1 | 0 | 48 | 11 | NA | 0.00 | 1955 | 46 | 8  |
| 675 | 0 | 0 | 1 | 2 | 41 | 14 | NA | 0.00 | 2500 | 44 | 17 |
| 676 | 0 | 0 | 0 | 0 | 50 | 12 | NA | 0.00 | 2750 | 52 | 10 |
| 677 | 0 | 0 | 0 | 0 | 58 | 8  | NA | 0.00 | 2040 | 59 | 5  |
| 678 | 0 | 0 | 0 | 5 | 38 | 13 | NA | 0.00 | 3275 | 43 | 15 |
| 679 | 0 | 0 | 0 | 1 | 37 | 12 | NA | 0.00 | 2400 | 39 | 12 |
| 680 | 0 | 0 | 0 | 0 | 50 | 16 | NA | 0.00 | 2024 | 51 | 17 |
| 681 | 0 | 0 | 0 | 4 | 42 | 8  | NA | 0.00 | 1840 | 44 | 6  |
| 682 | 0 | 0 | 1 | 3 | 37 | 9  | NA | 0.00 | 2033 | 37 | 17 |
| 683 | 0 | 0 | 0 | 2 | 41 | 16 | NA | 0.00 | 1946 | 40 | 17 |
| 684 | 0 | 0 | 0 | 2 | 31 | 12 | NA | 0.00 | 3660 | 31 | 12 |
| 685 | 0 | 0 | 0 | 0 | 51 | 12 | NA | 0.00 | 2088 | 55 | 11 |
| 686 | 0 | 0 | 1 | 2 | 36 | 12 | NA | 0.00 | 2048 | 41 | 12 |
| 687 | 0 | 0 | 0 | 0 | 54 | 15 | NA | 0.00 | 1920 | 52 | 15 |
| 688 | 0 | 0 | 0 | 0 | 49 | 12 | NA | 0.00 | 2000 | 54 | 12 |
| 689 | 0 | 0 | 1 | 1 | 48 | 9  | NA | 0.00 | 2204 | 47 | 8  |
| 690 | 0 | 0 | 0 | 2 | 42 | 9  | NA | 0.00 | 3157 | 45 | 10 |
| 691 | 0 | 0 | 1 | 2 | 41 | 12 | NA | 0.00 | 1665 | 44 | 14 |
| 692 | 0 | 0 | 0 | 0 | 55 | 16 | NA | 0.00 | 2304 | 56 | 11 |
| 693 | 0 | 0 | 0 | 0 | 42 | 9  | NA | 0.00 | 2275 | 46 | 8  |
| 694 | 0 | 0 | 0 | 1 | 32 | 15 | NA | 0.00 | 2760 | 33 | 17 |
| 695 | 0 | 0 | 0 | 2 | 43 | 12 | NA | 0.00 | 1750 | 44 | 14 |
| 696 | 0 | 0 | 1 | 3 | 33 | 12 | NA | 0.00 | 3366 | 37 | 13 |
| 697 | 0 | 0 | 0 | 1 | 48 | 15 | NA | 0.00 | 2205 | 51 | 16 |
| 698 | 0 | 0 | 0 | 2 | 43 | 12 | NA | 0.00 | 1990 | 48 | 9  |
| 699 | 0 | 0 | 1 | 3 | 47 | 17 | NA | 0.00 | 1930 | 57 | 16 |

|     |   |   |   |   |    |    |    |      |      |    |    |
|-----|---|---|---|---|----|----|----|------|------|----|----|
| 700 | 0 | 0 | 0 | 0 | 54 | 12 | NA | 0.00 | 1350 | 60 | 12 |
| 701 | 0 | 0 | 0 | 1 | 51 | 12 | NA | 0.00 | 3340 | 52 | 12 |
| 702 | 0 | 0 | 0 | 1 | 51 | 10 | NA | 0.00 | 960  | 57 | 10 |
| 703 | 0 | 0 | 1 | 1 | 43 | 13 | NA | 0.00 | 2732 | 42 | 13 |
| 704 | 0 | 0 | 0 | 0 | 53 | 12 | NA | 0.00 | 1624 | 59 | 8  |
| 705 | 0 | 0 | 1 | 1 | 34 | 11 | NA | 0.00 | 1804 | 36 | 12 |
| 706 | 0 | 0 | 1 | 1 | 31 | 8  | NA | 0.00 | 2805 | 31 | 10 |
| 707 | 0 | 0 | 0 | 0 | 56 | 12 | NA | 0.00 | 2160 | 59 | 8  |
| 708 | 0 | 0 | 0 | 1 | 42 | 16 | NA | 0.00 | 2052 | 55 | 15 |
| 709 | 0 | 0 | 0 | 2 | 32 | 12 | NA | 0.00 | 2250 | 35 | 16 |
| 710 | 0 | 0 | 1 | 3 | 35 | 12 | NA | 0.00 | 1120 | 37 | 12 |
| 711 | 0 | 0 | 1 | 1 | 30 | 12 | NA | 0.00 | 2450 | 36 | 14 |
| 712 | 0 | 0 | 0 | 0 | 51 | 10 | NA | 0.00 | 3432 | 50 | 11 |
| 713 | 0 | 0 | 0 | 3 | 47 | 12 | NA | 0.00 | 2700 | 48 | 12 |
| 714 | 0 | 0 | 0 | 1 | 54 | 12 | NA | 0.00 | 2817 | 55 | 13 |
| 715 | 0 | 0 | 3 | 0 | 31 | 15 | NA | 0.00 | 3000 | 34 | 17 |
| 716 | 0 | 0 | 0 | 0 | 47 | 10 | NA | 0.00 | 2125 | 45 | 11 |
| 717 | 0 | 0 | 0 | 3 | 47 | 14 | NA | 0.00 | 1864 | 42 | 16 |
| 718 | 0 | 0 | 0 | 3 | 40 | 12 | NA | 0.00 | 2400 | 39 | 12 |
| 719 | 0 | 0 | 0 | 0 | 48 | 8  | NA | 0.00 | 2160 | 50 | 7  |
| 720 | 0 | 0 | 0 | 7 | 34 | 8  | NA | 0.00 | 1040 | 51 | 7  |
| 721 | 0 | 0 | 0 | 3 | 38 | 12 | NA | 0.00 | 2450 | 42 | 16 |
| 722 | 0 | 0 | 1 | 3 | 32 | 12 | NA | 0.00 | 2500 | 34 | 16 |
| 723 | 0 | 0 | 0 | 1 | 48 | 16 | NA | 0.00 | 2131 | 45 | 17 |
| 724 | 0 | 0 | 0 | 2 | 41 | 12 | NA | 0.00 | 2165 | 46 | 7  |
| 725 | 0 | 0 | 0 | 2 | 49 | 5  | NA | 0.00 | 2230 | 43 | 3  |
| 726 | 0 | 0 | 0 | 0 | 59 | 8  | NA | 0.00 | 1995 | 55 | 12 |
| 727 | 0 | 0 | 0 | 0 | 58 | 13 | NA | 0.00 | 2025 | 57 | 16 |
| 728 | 0 | 0 | 0 | 3 | 41 | 12 | NA | 0.00 | 2450 | 48 | 15 |
| 729 | 0 | 0 | 0 | 2 | 45 | 12 | NA | 0.00 | 2160 | 45 | 12 |
| 730 | 0 | 0 | 1 | 1 | 30 | 14 | NA | 0.00 | 1715 | 32 | 17 |
| 731 | 0 | 0 | 0 | 1 | 41 | 12 | NA | 0.00 | 3018 | 42 | 16 |
| 732 | 0 | 0 | 2 | 0 | 30 | 12 | NA | 0.00 | 2216 | 33 | 16 |
| 733 | 0 | 0 | 0 | 1 | 53 | 12 | NA | 0.00 | 2499 | 54 | 12 |
| 734 | 0 | 0 | 0 | 0 | 31 | 12 | NA | 0.00 | 2250 | 37 | 14 |
| 735 | 0 | 0 | 0 | 2 | 43 | 14 | NA | 0.00 | 2116 | 44 | 17 |
| 736 | 0 | 0 | 1 | 1 | 31 | 12 | NA | 0.00 | 2016 | 30 | 14 |
| 737 | 0 | 0 | 0 | 0 | 51 | 12 | NA | 0.00 | 2470 | 60 | 10 |
| 738 | 0 | 0 | 0 | 0 | 43 | 9  | NA | 0.00 | 1640 | 45 | 12 |
| 739 | 0 | 0 | 1 | 2 | 31 | 14 | NA | 0.00 | 2016 | 34 | 16 |
| 740 | 0 | 0 | 0 | 0 | 48 | 11 | NA | 0.00 | 2185 | 48 | 12 |
| 741 | 0 | 0 | 1 | 1 | 31 | 12 | NA | 0.00 | 800  | 33 | 14 |
| 742 | 0 | 0 | 0 | 1 | 44 | 12 | NA | 0.00 | 3022 | 46 | 12 |

|     |   |   |   |   |    |    |    |      |      |    |    |
|-----|---|---|---|---|----|----|----|------|------|----|----|
| 743 | 0 | 0 | 0 | 1 | 48 | 11 | NA | 0.00 | 1512 | 50 | 14 |
| 744 | 0 | 0 | 0 | 1 | 53 | 12 | NA | 0.00 | 2677 | 53 | 12 |
| 745 | 0 | 0 | 0 | 3 | 42 | 10 | NA | 2.75 | 3150 | 44 | 12 |
| 746 | 0 | 0 | 2 | 6 | 39 | 12 | NA | 0.00 | 1430 | 34 | 12 |
| 747 | 0 | 0 | 1 | 2 | 32 | 10 | NA | 0.00 | 3307 | 36 | 4  |
| 748 | 0 | 0 | 0 | 2 | 36 | 12 | NA | 0.00 | 3120 | 39 | 12 |
| 749 | 0 | 0 | 0 | 2 | 40 | 13 | NA | 0.00 | 3020 | 43 | 16 |
| 750 | 0 | 0 | 2 | 3 | 31 | 12 | NA | 0.00 | 2056 | 33 | 12 |
| 751 | 0 | 0 | 0 | 0 | 43 | 12 | NA | 0.00 | 2383 | 43 | 12 |
| 752 | 0 | 0 | 0 | 0 | 60 | 12 | NA | 0.00 | 1705 | 55 | 8  |
| 753 | 0 | 0 | 0 | 3 | 39 | 9  | NA | 0.00 | 3120 | 48 | 12 |

|    | huswage | faminc | mtr    | motheduc | fatheduc | unem | city | exper | nwifeinc    |
|----|---------|--------|--------|----------|----------|------|------|-------|-------------|
| 1  | 4.0288  | 16310  | 0.7215 | 12       | 7        | 5.0  | 0    | 14    | 10.91005993 |
| 2  | 8.4416  | 21800  | 0.6615 | 7        | 7        | 11.0 | 1    | 5     | 19.49998093 |
| 3  | 3.5807  | 21040  | 0.6915 | 12       | 7        | 5.0  | 0    | 15    | 12.03991032 |
| 4  | 3.5417  | 7300   | 0.7815 | 7        | 7        | 5.0  | 0    | 6     | 6.79999590  |
| 5  | 10.0000 | 27300  | 0.6215 | 12       | 14       | 9.5  | 1    | 7     | 20.10005760 |
| 6  | 6.7106  | 19495  | 0.6915 | 14       | 7        | 7.5  | 1    | 33    | 9.85905361  |
| 7  | 3.4277  | 21152  | 0.6915 | 14       | 7        | 5.0  | 0    | 11    | 9.15204811  |
| 8  | 2.5485  | 18900  | 0.6915 | 3        | 3        | 5.0  | 0    | 35    | 10.90003777 |
| 9  | 4.2206  | 20405  | 0.7515 | 7        | 7        | 3.0  | 0    | 24    | 17.30500031 |
| 10 | 5.7143  | 20425  | 0.6915 | 7        | 7        | 5.0  | 0    | 21    | 12.92500019 |
| 11 | 9.7959  | 32300  | 0.5815 | 12       | 3        | 5.0  | 0    | 15    | 24.29995346 |
| 12 | 8.0000  | 28700  | 0.6215 | 14       | 7        | 5.0  | 0    | 14    | 19.70007133 |
| 13 | 5.3004  | 15500  | 0.7215 | 16       | 16       | 5.0  | 0    | 0     | 15.00000763 |
| 14 | 4.3413  | 16860  | 0.7215 | 10       | 10       | 7.5  | 1    | 14    | 14.60000038 |
| 15 | 10.8700 | 31431  | 0.5815 | 7        | 7        | 7.5  | 1    | 6     | 24.63091469 |
| 16 | 9.1499  | 19180  | 0.7215 | 16       | 10       | 7.5  | 1    | 9     | 17.53102684 |
| 17 | 6.1224  | 18600  | 0.6915 | 10       | 7        | 7.5  | 1    | 20    | 14.09998035 |
| 18 | 6.1498  | 19151  | 0.7215 | 12       | 12       | 7.5  | 1    | 6     | 15.83899975 |
| 19 | 6.9170  | 18100  | 0.6915 | 7        | 7        | 5.0  | 1    | 23    | 14.10000038 |
| 20 | 4.7103  | 20300  | 0.6915 | 12       | 7        | 5.0  | 0    | 9     | 10.29996109 |
| 21 | 3.1310  | 30419  | 0.6215 | 10       | 16       | 7.5  | 0    | 5     | 22.65498161 |
| 22 | 4.0000  | 14090  | 0.7215 | 12       | 10       | 3.0  | 0    | 11    | 8.09004784  |
| 23 | 7.2227  | 22679  | 0.6615 | 7        | 3        | 5.0  | 1    | 18    | 17.47900009 |
| 24 | 7.9652  | 12160  | 0.7215 | 7        | 7        | 11.0 | 0    | 15    | 9.56000042  |
| 25 | 4.0884  | 12487  | 0.7515 | 12       | 7        | 5.0  | 1    | 4     | 8.27495289  |
| 26 | 14.1810 | 29850  | 0.5815 | 16       | 14       | 9.5  | 1    | 21    | 27.34998512 |
| 27 | 6.5359  | 18100  | 0.6915 | 3        | 7        | 9.5  | 1    | 31    | 16.00000000 |
| 28 | 8.5000  | 26000  | 0.6615 | 3        | 7        | 11.0 | 1    | 9     | 16.99998283 |
| 29 | 6.2762  | 26100  | 0.6215 | 12       | 12       | 5.0  | 0    | 7     | 15.10005569 |
| 30 | 5.2083  | 17730  | 0.7215 | 12       | 12       | 9.5  | 0    | 7     | 15.69998360 |
| 31 | 2.7821  | 6719   | 0.7515 | 7        | 7        | 7.5  | 1    | 32    | 5.11895990  |

|    |         |       |        |    |    |      |   |    |             |
|----|---------|-------|--------|----|----|------|---|----|-------------|
| 32 | 4.9107  | 18550 | 0.6915 | 3  | 3  | 14.0 | 1 | 11 | 16.75001144 |
| 33 | 5.8669  | 24600 | 0.6615 | 12 | 10 | 7.5  | 0 | 16 | 13.59993172 |
| 34 | 7.5200  | 23100 | 0.6915 | 7  | 14 | 5.0  | 1 | 14 | 17.10004807 |
| 35 | 7.5449  | 24656 | 0.6615 | 12 | 12 | 5.0  | 1 | 27 | 16.73404884 |
| 36 | 5.5380  | 15897 | 0.7515 | 10 | 3  | 7.5  | 0 | 0  | 14.19697762 |
| 37 | 6.9231  | 20320 | 0.6915 | 3  | 3  | 11.0 | 1 | 17 | 10.31998730 |
| 38 | 5.0000  | 21384 | 0.6615 | 10 | 3  | 11.0 | 0 | 28 | 11.38410473 |
| 39 | 7.3064  | 25561 | 0.6215 | 7  | 7  | 14.0 | 0 | 24 | 14.59407806 |
| 40 | 11.2180 | 36550 | 0.5800 | 14 | 17 | 5.0  | 1 | 11 | 17.50043869 |
| 41 | 3.8462  | 15810 | 0.7215 | 12 | 12 | 3.0  | 0 | 1  | 15.50999641 |
| 42 | 5.8366  | 25500 | 0.6215 | 9  | 9  | 7.5  | 1 | 14 | 21.99997520 |
| 43 | 13.7250 | 24000 | 0.6615 | 14 | 16 | 9.5  | 1 | 6  | 22.50000000 |
| 44 | 6.3493  | 22172 | 0.6615 | 3  | 3  | 5.0  | 0 | 10 | 19.99399948 |
| 45 | 5.2528  | 17930 | 0.7215 | 12 | 7  | 5.0  | 0 | 6  | 14.13000011 |
| 46 | 1.3075  | 7000  | 0.7815 | 12 | 7  | 3.0  | 0 | 4  | 5.00001287  |
| 47 | 2.7998  | 25300 | 0.7215 | 14 | 16 | 5.0  | 1 | 10 | 21.15489769 |
| 48 | 2.6961  | 16212 | 0.7215 | 10 | 10 | 11.0 | 0 | 22 | 7.14194584  |
| 49 | 7.5688  | 22650 | 0.6615 | 7  | 7  | 3.0  | 0 | 16 | 16.65007210 |
| 50 | 3.4077  | 6985  | 0.7815 | 12 | 7  | 14.0 | 0 | 6  | 6.35199976  |
| 51 | 6.5401  | 30000 | 0.6915 | 7  | 7  | 11.0 | 1 | 12 | 27.31394768 |
| 52 | 7.2139  | 18500 | 0.6915 | 7  | 3  | 9.5  | 1 | 32 | 14.50000381 |
| 53 | 6.2732  | 16658 | 0.7515 | 12 | 7  | 5.0  | 0 | 15 | 16.25798988 |
| 54 | 5.8824  | 10300 | 0.7515 | 7  | 7  | 5.0  | 1 | 17 | 9.50000000  |
| 55 | 3.8095  | 11000 | 0.7515 | 7  | 3  | 7.5  | 0 | 34 | 7.99995613  |
| 56 | 6.3776  | 19900 | 0.6915 | 12 | 12 | 7.5  | 1 | 9  | 12.50002861 |
| 57 | 6.0453  | 32500 | 0.6400 | 7  | 7  | 14.0 | 1 | 37 | 14.00003242 |
| 58 | 8.8119  | 37300 | 0.5800 | 17 | 17 | 7.5  | 1 | 10 | 20.80007362 |
| 59 | 8.8765  | 30018 | 0.5815 | 17 | 7  | 11.0 | 1 | 35 | 19.38511276 |
| 60 | 3.3420  | 12807 | 0.7515 | 12 | 7  | 14.0 | 1 | 6  | 12.38699150 |
| 61 | 3.1836  | 39500 | 0.5515 | 14 | 3  | 7.5  | 0 | 19 | 28.50000000 |
| 62 | 6.9149  | 22050 | 0.6915 | 12 | 12 | 9.5  | 1 | 10 | 15.04990864 |
| 63 | 5.5147  | 15500 | 0.7215 | 7  | 7  | 14.0 | 1 | 11 | 10.49998379 |
| 64 | 5.2808  | 13810 | 0.7215 | 7  | 7  | 9.5  | 1 | 15 | 11.81000042 |
| 65 | 3.2000  | 11950 | 0.7515 | 7  | 7  | 5.0  | 1 | 12 | 6.95007324  |
| 66 | 5.8791  | 19175 | 0.6915 | 12 | 12 | 7.5  | 0 | 12 | 12.41997147 |
| 67 | 6.2500  | 17900 | 0.6915 | 12 | 16 | 7.5  | 0 | 14 | 17.40000343 |
| 68 | 7.4879  | 15850 | 0.7215 | 12 | 7  | 5.0  | 1 | 11 | 15.49999619 |
| 69 | 6.9767  | 27017 | 0.6915 | 7  | 7  | 5.0  | 1 | 9  | 21.21704292 |
| 70 | 8.0000  | 18900 | 0.6915 | 12 | 7  | 5.0  | 0 | 24 | 18.00000000 |
| 71 | 4.1319  | 21800 | 0.6915 | 12 | 12 | 7.5  | 1 | 12 | 11.89991856 |
| 72 | 14.4760 | 33552 | 0.5515 | 10 | 10 | 7.5  | 1 | 13 | 26.75195503 |
| 73 | 5.7343  | 22650 | 0.6615 | 7  | 9  | 7.5  | 1 | 29 | 12.14996147 |
| 74 | 3.3742  | 15200 | 0.7915 | 0  | 0  | 7.5  | 1 | 11 | 10.19999027 |

|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 75  | 1.8333  | 13120 | 0.7215 | 7  | 10 | 7.5  | 1 | 13 | 8.12001514  |
| 76  | 5.6025  | 21660 | 0.6615 | 12 | 14 | 5.0  | 1 | 19 | 10.65996456 |
| 77  | 4.2975  | 18190 | 0.7215 | 7  | 7  | 3.0  | 0 | 2  | 18.10000992 |
| 78  | 3.9161  | 9600  | 0.7515 | 3  | 3  | 14.0 | 1 | 24 | 8.59998608  |
| 79  | 4.8787  | 13755 | 0.7515 | 10 | 12 | 7.5  | 1 | 9  | 13.66499996 |
| 80  | 9.2402  | 35350 | 0.6615 | 7  | 12 | 7.5  | 1 | 6  | 32.34996033 |
| 81  | 6.6519  | 12405 | 0.7215 | 12 | 7  | 7.5  | 1 | 22 | 12.08500576 |
| 82  | 4.6217  | 12180 | 0.7515 | 12 | 17 | 9.5  | 0 | 30 | 12.14999962 |
| 83  | 9.9741  | 22962 | 0.6615 | 7  | 3  | 7.5  | 1 | 10 | 17.69502068 |
| 84  | 20.9180 | 25700 | 0.6215 | 7  | 7  | 9.5  | 1 | 6  | 24.70000076 |
| 85  | 1.9400  | 3305  | 0.7915 | 7  | 7  | 3.0  | 0 | 29 | 2.13399196  |
| 86  | 8.8351  | 32950 | 0.5815 | 7  | 12 | 5.0  | 1 | 29 | 20.95004845 |
| 87  | 4.6667  | 17000 | 0.6915 | 7  | 7  | 5.0  | 1 | 36 | 10.50008011 |
| 88  | 5.1894  | 13250 | 0.7515 | 7  | 7  | 5.0  | 1 | 19 | 10.55000019 |
| 89  | 18.7240 | 50750 | 0.4415 | 7  | 12 | 5.0  | 1 | 8  | 45.75000000 |
| 90  | 10.4170 | 15632 | 0.7715 | 10 | 10 | 14.0 | 0 | 13 | 13.63204002 |
| 91  | 8.8458  | 28316 | 0.6215 | 7  | 0  | 11.0 | 1 | 16 | 18.23893929 |
| 92  | 7.5690  | 17290 | 0.7215 | 12 | 12 | 9.5  | 1 | 11 | 17.08999634 |
| 93  | 4.4507  | 33600 | 0.6215 | 10 | 10 | 7.5  | 1 | 15 | 30.23489952 |
| 94  | 9.3204  | 29200 | 0.6215 | 12 | 7  | 9.0  | 1 | 6  | 28.70000076 |
| 95  | 9.1687  | 19870 | 0.6915 | 7  | 7  | 11.0 | 0 | 13 | 19.62999535 |
| 96  | 6.4834  | 16225 | 0.7215 | 7  | 7  | 11.0 | 0 | 22 | 12.82494259 |
| 97  | 7.8125  | 28600 | 0.6915 | 7  | 3  | 5.0  | 1 | 24 | 23.79999924 |
| 98  | 11.4040 | 30800 | 0.5815 | 14 | 12 | 7.5  | 1 | 2  | 26.30002594 |
| 99  | 5.0870  | 25700 | 0.6915 | 7  | 7  | 3.0  | 0 | 6  | 20.69990730 |
| 100 | 6.9758  | 27000 | 0.6215 | 12 | 12 | 3.0  | 0 | 2  | 26.00000381 |
| 101 | 5.2863  | 12077 | 0.7715 | 12 | 7  | 9.5  | 1 | 2  | 10.87702084 |
| 102 | 11.5620 | 29612 | 0.6615 | 7  | 7  | 11.0 | 0 | 14 | 25.61206245 |
| 103 | 8.6061  | 24479 | 0.6915 | 7  | 10 | 9.5  | 1 | 9  | 20.98899460 |
| 104 | 12.8050 | 79750 | 0.4415 | 14 | 14 | 7.5  | 1 | 11 | 70.74993134 |
| 105 | 6.6946  | 20050 | 0.6915 | 12 | 7  | 11.0 | 0 | 9  | 17.04999924 |
| 106 | 8.3333  | 21500 | 0.6915 | 10 | 12 | 11.0 | 1 | 6  | 20.99999619 |
| 107 | 4.1667  | 16120 | 0.6915 | 7  | 7  | 5.0  | 0 | 19 | 8.11999989  |
| 108 | 5.4759  | 24686 | 0.7215 | 7  | 7  | 9.5  | 0 | 26 | 20.88599014 |
| 109 | 5.1440  | 24669 | 0.6915 | 7  | 10 | 9.5  | 1 | 19 | 17.66891861 |
| 110 | 11.6670 | 26400 | 0.6615 | 7  | 7  | 7.5  | 1 | 3  | 25.20002937 |
| 111 | 7.2917  | 16245 | 0.7215 | 12 | 12 | 7.5  | 1 | 7  | 14.24500561 |
| 112 | 4.8611  | 23300 | 0.6615 | 7  | 7  | 9.5  | 1 | 28 | 14.30000019 |
| 113 | 12.1640 | 27200 | 0.6215 | 12 | 7  | 9.5  | 1 | 13 | 23.70001030 |
| 114 | 10.8230 | 51000 | 0.4615 | 10 | 17 | 9.5  | 1 | 9  | 45.99999619 |
| 115 | 12.4780 | 55000 | 0.4615 | 10 | 7  | 14.0 | 1 | 15 | 42.99990463 |
| 116 | 6.1620  | 15389 | 0.7215 | 7  | 7  | 7.5  | 1 | 20 | 14.74899960 |
| 117 | 7.1846  | 23150 | 0.6615 | 7  | 7  | 9.5  | 1 | 29 | 16.15005493 |

|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 118 | 7.0930  | 29774 | 0.6215 | 7  | 10 | 14.0 | 1 | 9  | 17.77400017 |
| 119 | 17.8260 | 91044 | 0.4415 | 12 | 10 | 14.0 | 1 | 1  | 91.00000000 |
| 120 | 6.3930  | 28200 | 0.5815 | 7  | 12 | 14.0 | 1 | 8  | 22.29993439 |
| 121 | 11.7190 | 36150 | 0.5515 | 7  | 7  | 9.5  | 1 | 19 | 34.60001373 |
| 122 | 4.7883  | 15652 | 0.7215 | 12 | 12 | 7.5  | 0 | 23 | 9.62000179  |
| 123 | 4.2328  | 18900 | 0.7515 | 14 | 7  | 11.0 | 0 | 3  | 10.89994621 |
| 124 | 7.1066  | 23600 | 0.6615 | 12 | 10 | 7.5  | 0 | 13 | 14.49994373 |
| 125 | 8.3333  | 36200 | 0.6100 | 7  | 7  | 7.5  | 1 | 8  | 22.00001526 |
| 126 | 6.9888  | 18700 | 0.6915 | 10 | 10 | 7.5  | 0 | 17 | 17.90007973 |
| 127 | 9.5913  | 24125 | 0.6615 | 7  | 7  | 11.0 | 1 | 4  | 23.67506218 |
| 128 | 6.0204  | 15800 | 0.7215 | 7  | 7  | 7.5  | 0 | 15 | 11.79996014 |
| 129 | 2.9686  | 19742 | 0.7215 | 12 | 7  | 3.0  | 0 | 11 | 16.14195442 |
| 130 | 7.0000  | 22600 | 0.6915 | 10 | 7  | 9.5  | 0 | 7  | 18.39997101 |
| 131 | 7.1627  | 17500 | 0.7215 | 7  | 7  | 7.5  | 0 | 0  | 15.49994755 |
| 132 | 4.7364  | 19820 | 0.6915 | 7  | 7  | 7.5  | 0 | 0  | 17.32399940 |
| 133 | 8.7810  | 20155 | 0.6915 | 12 | 16 | 11.0 | 1 | 10 | 19.20500374 |
| 134 | 9.8315  | 37300 | 0.5800 | 10 | 12 | 7.5  | 1 | 8  | 21.30006218 |
| 135 | 6.6496  | 24860 | 0.7215 | 7  | 7  | 7.5  | 1 | 2  | 23.55999565 |
| 136 | 9.8485  | 21450 | 0.6615 | 12 | 3  | 7.5  | 1 | 4  | 20.85000038 |
| 137 | 9.8039  | 29650 | 0.6215 | 7  | 7  | 5.0  | 1 | 6  | 26.14999962 |
| 138 | 8.2604  | 23000 | 0.6615 | 7  | 7  | 11.0 | 1 | 18 | 17.00000000 |
| 139 | 9.0676  | 21120 | 0.6915 | 7  | 7  | 9.0  | 1 | 3  | 20.72000313 |
| 140 | 8.5082  | 26000 | 0.6215 | 7  | 12 | 5.0  | 1 | 22 | 17.00008965 |
| 141 | 7.1565  | 28000 | 0.6215 | 3  | 7  | 7.5  | 1 | 33 | 15.99999809 |
| 142 | 7.0423  | 45500 | 0.5200 | 12 | 12 | 11.0 | 1 | 28 | 19.50004959 |
| 143 | 6.5934  | 16000 | 0.7215 | 16 | 12 | 14.0 | 1 | 23 | 12.00000381 |
| 144 | 4.3457  | 18232 | 0.6915 | 7  | 14 | 11.0 | 0 | 27 | 13.73191166 |
| 145 | 7.2362  | 28160 | 0.7215 | 3  | 7  | 14.0 | 1 | 11 | 27.19999123 |
| 146 | 1.7400  | 5965  | 0.8015 | 12 | 7  | 11.0 | 1 | 6  | 5.31500006  |
| 147 | 6.8966  | 19000 | 0.7215 | 7  | 7  | 9.5  | 1 | 11 | 16.00000000 |
| 148 | 5.0455  | 36872 | 0.5515 | 12 | 12 | 11.0 | 1 | 14 | 27.87198257 |
| 149 | 17.2500 | 42000 | 0.4915 | 12 | 12 | 14.0 | 1 | 17 | 40.00001144 |
| 150 | 8.3333  | 26900 | 0.6215 | 16 | 14 | 11.0 | 1 | 17 | 15.90003395 |
| 151 | 9.3750  | 30800 | 0.5815 | 12 | 10 | 9.0  | 0 | 14 | 27.49996948 |
| 152 | 8.2790  | 21520 | 0.6915 | 12 | 12 | 11.0 | 1 | 11 | 17.02005005 |
| 153 | 4.5000  | 24795 | 0.6915 | 7  | 7  | 7.5  | 1 | 7  | 22.39493942 |
| 154 | 4.1995  | 12900 | 0.7215 | 14 | 16 | 14.0 | 1 | 8  | 11.10000038 |
| 155 | 16.0640 | 42700 | 0.4915 | 7  | 7  | 7.5  | 1 | 6  | 32.70001221 |
| 156 | 11.2770 | 38800 | 0.5215 | 10 | 17 | 11.0 | 1 | 8  | 27.79996109 |
| 157 | 0.5494  | 2500  | 0.9415 | 7  | 3  | 3.0  | 0 | 4  | 2.19999409  |
| 158 | 9.5480  | 26921 | 0.6215 | 14 | 10 | 11.0 | 1 | 25 | 19.72095108 |
| 159 | 5.3333  | 18300 | 0.6915 | 7  | 9  | 3.0  | 0 | 24 | 9.99998760  |
| 160 | 5.4545  | 17200 | 0.7215 | 7  | 7  | 14.0 | 1 | 11 | 13.19996834 |

|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 161 | 5.9026  | 14209 | 0.7515 | 12 | 3  | 9.5  | 1 | 19 | 12.70897484 |
| 162 | 9.8576  | 32300 | 0.5815 | 12 | 16 | 14.0 | 1 | 9  | 27.30004692 |
| 163 | 11.6850 | 21400 | 0.7215 | 17 | 12 | 7.5  | 1 | 19 | 21.20000076 |
| 164 | 6.2278  | 14700 | 0.7215 | 7  | 7  | 9.5  | 0 | 14 | 14.40000439 |
| 165 | 9.1748  | 25516 | 0.6215 | 7  | 7  | 9.5  | 1 | 22 | 20.57596016 |
| 166 | 6.2972  | 13300 | 0.7515 | 3  | 7  | 5.0  | 1 | 6  | 12.49999046 |
| 167 | 10.4710 | 31000 | 0.5815 | 12 | 12 | 9.5  | 1 | 23 | 17.50021553 |
| 168 | 14.5830 | 48800 | 0.4915 | 7  | 3  | 11.0 | 1 | 15 | 44.00003815 |
| 169 | 6.2143  | 15519 | 0.7215 | 7  | 7  | 14.0 | 1 | 6  | 13.11895466 |
| 170 | 6.6288  | 19500 | 0.6915 | 7  | 7  | 7.5  | 0 | 11 | 14.00005627 |
| 171 | 3.8246  | 14545 | 0.7215 | 3  | 7  | 5.0  | 0 | 2  | 9.64508629  |
| 172 | 7.8125  | 22897 | 0.6915 | 7  | 7  | 14.0 | 1 | 22 | 17.39704514 |
| 173 | 3.4806  | 14300 | 0.7215 | 10 | 10 | 7.5  | 1 | 10 | 7.79988861  |
| 174 | 5.5500  | 14884 | 0.7515 | 10 | 10 | 9.5  | 1 | 14 | 13.13397694 |
| 175 | 11.5940 | 27400 | 0.6215 | 12 | 7  | 11.0 | 1 | 12 | 25.60000038 |
| 176 | 9.5238  | 16400 | 0.7215 | 7  | 12 | 14.0 | 1 | 9  | 13.90002537 |
| 177 | 7.2805  | 25704 | 0.6215 | 14 | 17 | 7.5  | 0 | 13 | 19.29794312 |
| 178 | 3.0000  | 12800 | 0.7215 | 10 | 10 | 7.5  | 0 | 18 | 9.20001602  |
| 179 | 10.4000 | 40000 | 0.6215 | 7  | 7  | 7.5  | 0 | 8  | 37.99998856 |
| 180 | 10.0500 | 47000 | 0.6615 | 7  | 7  | 14.0 | 1 | 11 | 44.00000000 |
| 181 | 8.7866  | 25872 | 0.6615 | 10 | 12 | 9.5  | 1 | 9  | 21.37202454 |
| 182 | 10.1400 | 26868 | 0.6915 | 12 | 7  | 9.5  | 1 | 9  | 23.66802025 |
| 183 | 5.0000  | 18000 | 0.6915 | 12 | 12 | 9.5  | 1 | 14 | 9.00000000  |
| 184 | 11.8880 | 30200 | 0.5815 | 7  | 7  | 5.0  | 1 | 9  | 25.19995117 |
| 185 | 13.3330 | 26220 | 0.6615 | 7  | 7  | 7.5  | 1 | 2  | 21.21999931 |
| 186 | 8.6806  | 40500 | 0.5815 | 7  | 7  | 3.0  | 0 | 12 | 33.96991348 |
| 187 | 7.2917  | 33570 | 0.6100 | 12 | 7  | 7.5  | 1 | 15 | 17.06999969 |
| 188 | 3.5242  | 16917 | 0.7215 | 7  | 14 | 14.0 | 1 | 11 | 6.01602364  |
| 189 | 6.1818  | 18000 | 0.7215 | 12 | 7  | 9.5  | 0 | 7  | 17.10000992 |
| 190 | 2.9755  | 8337  | 0.7515 | 12 | 12 | 11.0 | 1 | 9  | 8.23700047  |
| 191 | 4.5769  | 17100 | 0.7215 | 12 | 7  | 9.5  | 0 | 19 | 13.30008221 |
| 192 | 3.1056  | 17800 | 0.7515 | 10 | 7  | 11.0 | 0 | 11 | 16.00002098 |
| 193 | 5.8228  | 13740 | 0.7515 | 12 | 12 | 14.0 | 1 | 8  | 12.53999043 |
| 194 | 7.5000  | 27000 | 0.6215 | 10 | 3  | 9.5  | 1 | 13 | 18.00003815 |
| 195 | 8.3333  | 32600 | 0.6215 | 12 | 7  | 7.5  | 1 | 4  | 31.20000076 |
| 196 | 9.2347  | 28030 | 0.6615 | 12 | 12 | 14.0 | 1 | 7  | 20.74991035 |
| 197 | 5.5000  | 23100 | 0.6615 | 12 | 12 | 3.0  | 0 | 19 | 11.09992027 |
| 198 | 6.0000  | 24580 | 0.6615 | 7  | 7  | 9.5  | 1 | 14 | 20.68000031 |
| 199 | 6.6667  | 29000 | 0.6215 | 12 | 7  | 9.5  | 1 | 14 | 18.00000954 |
| 200 | 13.0610 | 42430 | 0.5215 | 12 | 14 | 9.5  | 1 | 3  | 32.43006516 |
| 201 | 12.7940 | 41800 | 0.5215 | 12 | 12 | 7.5  | 1 | 9  | 32.90003204 |
| 202 | 12.0000 | 39100 | 0.5800 | 12 | 17 | 9.5  | 1 | 7  | 24.10000610 |
| 203 | 6.7300  | 31800 | 0.5815 | 16 | 17 | 11.0 | 1 | 7  | 17.80039215 |

|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 204 | 6.6790  | 22200 | 0.6915 | 7  | 7  | 14.0 | 0 | 14 | 20.50001717 |
| 205 | 4.3945  | 19500 | 0.6915 | 16 | 7  | 3.0  | 0 | 29 | 10.49989796 |
| 206 | 4.6875  | 14027 | 0.7515 | 7  | 10 | 11.0 | 0 | 19 | 10.43703461 |
| 207 | 7.6989  | 21195 | 0.6615 | 7  | 7  | 11.0 | 1 | 14 | 18.19499016 |
| 208 | 4.3287  | 19013 | 0.6915 | 10 | 7  | 7.5  | 0 | 16 | 12.84507656 |
| 209 | 6.7416  | 20900 | 0.6615 | 12 | 7  | 11.0 | 1 | 10 | 13.80000019 |
| 210 | 9.3525  | 26820 | 0.6215 | 10 | 3  | 11.0 | 0 | 12 | 22.19999504 |
| 211 | 9.1429  | 12800 | 0.7515 | 0  | 0  | 14.0 | 1 | 24 | 6.69994116  |
| 212 | 2.6418  | 7850  | 0.7515 | 7  | 7  | 14.0 | 0 | 6  | 6.25001574  |
| 213 | 7.3650  | 18600 | 0.7215 | 12 | 12 | 7.5  | 1 | 9  | 15.60000801 |
| 214 | 1.4066  | 5380  | 0.7715 | 12 | 7  | 5.0  | 0 | 14 | 3.30000997  |
| 215 | 1.5192  | 6114  | 0.7715 | 10 | 7  | 14.0 | 0 | 26 | 3.67097759  |
| 216 | 3.3439  | 8234  | 0.7515 | 12 | 12 | 14.0 | 0 | 7  | 7.78999710  |
| 217 | 2.9106  | 20646 | 0.7215 | 3  | 7  | 11.0 | 1 | 4  | 18.27198982 |
| 218 | 4.3834  | 16640 | 0.7215 | 7  | 7  | 9.5  | 0 | 15 | 10.95397949 |
| 219 | 4.2098  | 13900 | 0.7215 | 12 | 12 | 5.0  | 1 | 23 | 13.49999237 |
| 220 | 3.7129  | 11500 | 0.7815 | 10 | 7  | 7.5  | 0 | 1  | 11.20001221 |
| 221 | 10.6060 | 34000 | 0.5515 | 7  | 7  | 14.0 | 1 | 29 | 20.99990845 |
| 222 | 8.6382  | 28700 | 0.6615 | 7  | 3  | 11.0 | 1 | 9  | 25.69999886 |
| 223 | 3.8367  | 9563  | 0.7515 | 7  | 7  | 7.5  | 0 | 6  | 8.93299389  |
| 224 | 7.1671  | 20960 | 0.6915 | 7  | 7  | 7.5  | 0 | 11 | 19.15997696 |
| 225 | 8.8634  | 38590 | 0.6215 | 12 | 10 | 14.0 | 1 | 17 | 26.58998680 |
| 226 | 7.7369  | 27900 | 0.6615 | 12 | 12 | 5.0  | 1 | 6  | 22.40000534 |
| 227 | 9.1702  | 25633 | 0.6215 | 7  | 7  | 7.5  | 1 | 7  | 20.63299942 |
| 228 | 11.2900 | 35200 | 0.5515 | 12 | 12 | 7.5  | 1 | 2  | 28.20000648 |
| 229 | 6.3269  | 29500 | 0.5815 | 7  | 7  | 7.5  | 1 | 24 | 28.79999924 |
| 230 | 4.7468  | 10000 | 0.7515 | 10 | 7  | 7.5  | 0 | 4  | 8.99999714  |
| 231 | 4.8885  | 19800 | 0.6915 | 10 | 7  | 5.0  | 0 | 11 | 11.39994240 |
| 232 | 2.4842  | 12900 | 0.7215 | 7  | 7  | 5.0  | 0 | 25 | 10.40001392 |
| 233 | 8.5470  | 26080 | 0.6215 | 12 | 12 | 7.5  | 0 | 11 | 19.08005524 |
| 234 | 6.6379  | 13066 | 0.7515 | 17 | 7  | 11.0 | 1 | 2  | 9.46603966  |
| 235 | 3.1863  | 12500 | 0.7215 | 7  | 7  | 7.5  | 0 | 19 | 6.50006008  |
| 236 | 4.5466  | 35600 | 0.5815 | 7  | 7  | 9.0  | 1 | 7  | 29.11701393 |
| 237 | 12.7890 | 19424 | 0.7515 | 7  | 7  | 5.0  | 1 | 2  | 19.10301971 |
| 238 | 6.5280  | 26250 | 0.6615 | 7  | 7  | 5.0  | 1 | 20 | 16.34997177 |
| 239 | 16.4030 | 36525 | 0.5515 | 12 | 14 | 9.5  | 1 | 10 | 32.02501678 |
| 240 | 7.0000  | 34700 | 0.6100 | 14 | 17 | 14.0 | 1 | 19 | 16.70006180 |
| 241 | 13.5420 | 8311  | 0.7515 | 7  | 7  | 11.0 | 1 | 17 | 4.81103754  |
| 242 | 6.7130  | 28626 | 0.6915 | 12 | 10 | 11.0 | 1 | 12 | 24.62600899 |
| 243 | 5.4487  | 24400 | 0.6615 | 7  | 7  | 5.0  | 1 | 11 | 17.40001297 |
| 244 | 6.6872  | 14025 | 0.7215 | 7  | 7  | 7.5  | 1 | 6  | 13.02503967 |
| 245 | 9.0943  | 21367 | 0.6915 | 16 | 12 | 14.0 | 1 | 10 | 19.00698280 |
| 246 | 6.5337  | 14136 | 0.7515 | 7  | 7  | 7.5  | 0 | 4  | 14.02999973 |



|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 247 | 4.6860  | 19900 | 0.7515 | 10 | 7  | 5.0  | 1 | 2  | 14.89990616 |
| 248 | 8.0000  | 37000 | 0.5215 | 12 | 9  | 9.5  | 1 | 13 | 25.00005531 |
| 249 | 4.0530  | 18500 | 0.6915 | 7  | 7  | 7.5  | 0 | 21 | 10.70006752 |
| 250 | 8.1633  | 34550 | 0.5515 | 16 | 14 | 5.0  | 1 | 9  | 24.25000381 |
| 251 | 16.5000 | 49620 | 0.4615 | 10 | 7  | 11.0 | 1 | 4  | 39.13996506 |
| 252 | 3.4615  | 10400 | 0.7815 | 3  | 3  | 7.5  | 0 | 2  | 7.19997311  |
| 253 | 11.3610 | 33000 | 0.5515 | 16 | 16 | 11.0 | 1 | 19 | 31.81099892 |
| 254 | 3.8911  | 16200 | 0.7215 | 7  | 3  | 7.5  | 1 | 4  | 10.00004768 |
| 255 | 9.6059  | 22660 | 0.6915 | 12 | 16 | 7.5  | 1 | 9  | 20.65999985 |
| 256 | 2.6687  | 16000 | 0.7215 | 7  | 7  | 7.5  | 1 | 14 | 13.49997616 |
| 257 | 8.8865  | 25780 | 0.6615 | 7  | 16 | 9.5  | 1 | 6  | 25.37999535 |
| 258 | 6.3636  | 20675 | 0.7215 | 7  | 12 | 7.5  | 1 | 24 | 18.27497673 |
| 259 | 17.7280 | 40213 | 0.5515 | 12 | 7  | 11.0 | 0 | 1  | 39.21300125 |
| 260 | 5.2923  | 15500 | 0.7215 | 12 | 7  | 7.5  | 1 | 13 | 10.49993610 |
| 261 | 15.6860 | 35207 | 0.5815 | 7  | 12 | 9.5  | 1 | 3  | 34.85699844 |
| 262 | 5.2423  | 35702 | 0.5515 | 10 | 12 | 11.0 | 1 | 10 | 28.50199890 |
| 263 | 3.0395  | 17800 | 0.7215 | 14 | 12 | 9.5  | 1 | 16 | 12.99995995 |
| 264 | 16.7450 | 50900 | 0.4915 | 16 | 16 | 5.0  | 1 | 9  | 41.39990997 |
| 265 | 3.7500  | 17280 | 0.6915 | 7  | 7  | 5.0  | 0 | 19 | 14.77999973 |
| 266 | 5.8140  | 15150 | 0.7215 | 10 | 9  | 5.0  | 1 | 4  | 15.04999828 |
| 267 | 10.8330 | 36200 | 0.5815 | 7  | 7  | 7.5  | 1 | 10 | 29.69997787 |
| 268 | 9.0029  | 17465 | 0.7215 | 14 | 12 | 5.0  | 1 | 5  | 16.16501999 |
| 269 | 6.5400  | 45205 | 0.6100 | 14 | 12 | 3.0  | 1 | 7  | 25.20515823 |
| 270 | 5.9783  | 14500 | 0.7515 | 12 | 10 | 5.0  | 0 | 3  | 14.19999886 |
| 271 | 8.6248  | 32011 | 0.5815 | 7  | 7  | 7.5  | 0 | 38 | 18.15896797 |
| 272 | 4.8329  | 35200 | 0.6215 | 7  | 12 | 9.5  | 0 | 16 | 28.98106384 |
| 273 | 10.9090 | 13579 | 0.7515 | 3  | 7  | 11.0 | 0 | 13 | 13.39200306 |
| 274 | 3.8864  | 10455 | 0.7515 | 7  | 7  | 11.0 | 0 | 1  | 9.17502022  |
| 275 | 8.4574  | 32600 | 0.5515 | 7  | 3  | 5.0  | 0 | 7  | 27.03984833 |
| 276 | 5.0000  | 19150 | 0.6915 | 7  | 10 | 11.0 | 1 | 15 | 13.14995193 |
| 277 | 7.4212  | 24400 | 0.6615 | 12 | 17 | 9.5  | 1 | 10 | 16.40007019 |
| 278 | 4.4938  | 21700 | 0.6915 | 10 | 7  | 3.0  | 0 | 2  | 21.29999161 |
| 279 | 7.0252  | 26201 | 0.6215 | 7  | 3  | 9.5  | 1 | 19 | 17.20101547 |
| 280 | 3.2788  | 11920 | 0.7515 | 3  | 3  | 7.5  | 1 | 25 | 8.56002617  |
| 281 | 1.2861  | 16300 | 0.7215 | 12 | 12 | 9.5  | 1 | 25 | 6.49083996  |
| 282 | 5.5556  | 16500 | 0.7215 | 7  | 7  | 5.0  | 1 | 7  | 12.49996758 |
| 283 | 7.4951  | 30000 | 0.5815 | 12 | 7  | 11.0 | 1 | 15 | 27.00002480 |
| 284 | 22.1090 | 62500 | 0.4415 | 7  | 7  | 9.5  | 1 | 11 | 53.50004959 |
| 285 | 9.0580  | 58500 | 0.4415 | 10 | 10 | 9.5  | 1 | 25 | 52.49994659 |
| 286 | 11.5380 | 40900 | 0.5215 | 7  | 7  | 9.5  | 1 | 19 | 38.39997864 |
| 287 | 6.0468  | 16308 | 0.6915 | 0  | 10 | 7.5  | 1 | 4  | 13.89194489 |
| 288 | 1.3653  | 9300  | 0.7515 | 7  | 7  | 7.5  | 1 | 14 | 3.89999294  |
| 289 | 16.5500 | 35700 | 0.5515 | 10 | 9  | 7.5  | 1 | 19 | 34.19999695 |

|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 290 | 8.7719  | 35700 | 0.6400 | 9  | 9  | 11.0 | 1 | 18 | 19.70007896 |
| 291 | 9.6354  | 24500 | 0.6615 | 12 | 12 | 5.0  | 1 | 14 | 18.49995232 |
| 292 | 6.6788  | 13000 | 0.7215 | 12 | 12 | 7.5  | 1 | 11 | 10.99997616 |
| 293 | 7.5727  | 52600 | 0.4415 | 12 | 12 | 5.0  | 0 | 4  | 43.30001068 |
| 294 | 7.8125  | 25360 | 0.6615 | 3  | 7  | 7.5  | 1 | 29 | 18.76000786 |
| 295 | 1.9835  | 9400  | 0.7515 | 9  | 9  | 7.5  | 0 | 21 | 4.80009604  |
| 296 | 9.5238  | 26800 | 0.6215 | 12 | 12 | 11.0 | 1 | 24 | 21.50000191 |
| 297 | 6.4250  | 33040 | 0.6615 | 12 | 7  | 7.5  | 1 | 19 | 28.03993797 |
| 298 | 10.9840 | 26350 | 0.6215 | 14 | 12 | 7.5  | 1 | 31 | 26.00000381 |
| 299 | 12.7660 | 39000 | 0.5215 | 7  | 7  | 14.0 | 1 | 28 | 27.00000000 |
| 300 | 9.5545  | 35100 | 0.6100 | 12 | 12 | 9.5  | 1 | 15 | 17.79968834 |
| 301 | 5.4967  | 22502 | 0.6615 | 12 | 12 | 11.0 | 0 | 27 | 17.40194511 |
| 302 | 9.7618  | 21950 | 0.6915 | 12 | 14 | 14.0 | 0 | 13 | 19.30999184 |
| 303 | 5.0000  | 13000 | 0.7515 | 7  | 7  | 7.5  | 0 | 4  | 9.99997997  |
| 304 | 5.9995  | 18180 | 0.7215 | 12 | 14 | 9.0  | 1 | 10 | 11.17998028 |
| 305 | 6.9149  | 20957 | 0.6915 | 10 | 10 | 9.0  | 1 | 8  | 18.85695648 |
| 306 | 4.9669  | 13700 | 0.7215 | 12 | 12 | 7.5  | 0 | 4  | 12.30002022 |
| 307 | 2.3896  | 20000 | 0.6915 | 7  | 7  | 5.0  | 1 | 18 | 13.67711830 |
| 308 | 4.5122  | 12260 | 0.7515 | 7  | 7  | 5.0  | 1 | 3  | 9.55999660  |
| 309 | 9.2308  | 24850 | 0.6615 | 3  | 12 | 7.5  | 1 | 11 | 24.49998474 |
| 310 | 11.4580 | 29150 | 0.5815 | 12 | 7  | 7.5  | 1 | 8  | 23.14999962 |
| 311 | 7.6993  | 23591 | 0.6615 | 7  | 7  | 11.0 | 1 | 10 | 15.59088326 |
| 312 | 4.1830  | 24717 | 0.6615 | 16 | 12 | 11.0 | 1 | 33 | 14.42092419 |
| 313 | 8.3333  | 30455 | 0.6215 | 12 | 12 | 9.0  | 1 | 19 | 17.45490837 |
| 314 | 5.1042  | 19600 | 0.6915 | 12 | 12 | 7.5  | 1 | 35 | 9.80001926  |
| 315 | 8.2271  | 31875 | 0.6400 | 7  | 12 | 5.0  | 1 | 21 | 17.57446480 |
| 316 | 5.6634  | 24055 | 0.6615 | 14 | 14 | 7.5  | 0 | 7  | 16.55500031 |
| 317 | 5.2220  | 18795 | 0.7215 | 7  | 10 | 7.5  | 0 | 18 | 13.29497433 |
| 318 | 7.1900  | 12198 | 0.7515 | 7  | 7  | 7.5  | 0 | 4  | 11.84400272 |
| 319 | 13.9070 | 52645 | 0.4915 | 12 | 7  | 7.5  | 1 | 12 | 46.64506149 |
| 320 | 6.0163  | 16600 | 0.7215 | 10 | 7  | 14.0 | 0 | 16 | 14.69998932 |
| 321 | 7.6782  | 32590 | 0.6215 | 7  | 7  | 7.5  | 1 | 14 | 26.09008026 |
| 322 | 5.3112  | 10020 | 0.7515 | 3  | 7  | 7.5  | 1 | 3  | 9.89999962  |
| 323 | 4.1228  | 12048 | 0.7515 | 7  | 7  | 11.0 | 0 | 1  | 9.04802608  |
| 324 | 7.8125  | 39750 | 0.6215 | 7  | 7  | 11.0 | 0 | 27 | 30.75006485 |
| 325 | 4.6053  | 15700 | 0.7215 | 10 | 7  | 7.5  | 1 | 12 | 8.49993992  |
| 326 | 3.9746  | 24250 | 0.6615 | 7  | 7  | 3.0  | 0 | 6  | 22.24999237 |
| 327 | 15.0630 | 43210 | 0.5215 | 7  | 12 | 14.0 | 1 | 9  | 42.90999985 |
| 328 | 4.5064  | 37100 | 0.6215 | 12 | 12 | 5.0  | 0 | 2  | 33.29999924 |
| 329 | 5.8824  | 23820 | 0.6615 | 12 | 7  | 5.0  | 0 | 6  | 13.81990337 |
| 330 | 10.2280 | 31600 | 0.5815 | 12 | 14 | 5.0  | 1 | 9  | 23.60000801 |
| 331 | 6.5789  | 24000 | 0.6615 | 10 | 10 | 7.5  | 1 | 16 | 13.00006771 |
| 332 | 8.8145  | 30750 | 0.5815 | 14 | 12 | 5.0  | 0 | 22 | 20.74994087 |

|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 333 | 2.9528  | 11050 | 0.7515 | 7  | 7  | 14.0 | 0 | 26 | 6.30000019  |
| 334 | 4.5173  | 12239 | 0.7515 | 7  | 7  | 14.0 | 0 | 11 | 7.78892469  |
| 335 | 5.1282  | 12870 | 0.7515 | 14 | 12 | 7.5  | 1 | 11 | 10.47004032 |
| 336 | 4.1451  | 17200 | 0.7215 | 10 | 7  | 7.5  | 0 | 15 | 12.00000000 |
| 337 | 8.7912  | 23980 | 0.6615 | 10 | 10 | 7.5  | 0 | 13 | 16.97991562 |
| 338 | 7.3061  | 18600 | 0.6915 | 7  | 12 | 14.0 | 1 | 6  | 17.89999962 |
| 339 | 6.0069  | 23920 | 0.6915 | 7  | 10 | 9.5  | 1 | 20 | 15.53993702 |
| 340 | 8.3333  | 16084 | 0.7515 | 7  | 7  | 14.0 | 1 | 17 | 9.88398552  |
| 341 | 11.5290 | 31100 | 0.5815 | 14 | 14 | 11.0 | 1 | 8  | 28.59995079 |
| 342 | 6.6667  | 20460 | 0.6615 | 7  | 7  | 11.0 | 1 | 13 | 17.66001129 |
| 343 | 8.6806  | 36000 | 0.5515 | 12 | 12 | 7.5  | 1 | 15 | 25.99991798 |
| 344 | 3.4680  | 17302 | 0.7215 | 14 | 12 | 3.0  | 0 | 14 | 13.60200977 |
| 345 | 3.0321  | 16450 | 0.7215 | 14 | 7  | 3.0  | 0 | 14 | 15.80000019 |
| 346 | 13.8070 | 41170 | 0.5815 | 14 | 16 | 9.5  | 1 | 6  | 41.09999466 |
| 347 | 6.2174  | 20130 | 0.6615 | 0  | 0  | 7.5  | 1 | 24 | 10.77504158 |
| 348 | 4.2308  | 9200  | 0.7515 | 16 | 12 | 9.5  | 1 | 10 | 9.00004673  |
| 349 | 11.4700 | 24751 | 0.6615 | 7  | 7  | 11.0 | 1 | 2  | 24.39899445 |
| 350 | 12.2450 | 57300 | 0.5000 | 12 | 17 | 9.5  | 1 | 9  | 37.30009079 |
| 351 | 9.2105  | 37200 | 0.5815 | 7  | 7  | 7.5  | 1 | 23 | 27.99994850 |
| 352 | 6.3309  | 14000 | 0.7215 | 10 | 12 | 14.0 | 1 | 12 | 13.70000267 |
| 353 | 7.8039  | 20610 | 0.6915 | 7  | 3  | 14.0 | 0 | 8  | 17.20994377 |
| 354 | 7.6754  | 14800 | 0.7215 | 10 | 7  | 7.5  | 1 | 16 | 14.00001431 |
| 355 | 15.5820 | 40005 | 0.5515 | 10 | 14 | 14.0 | 1 | 10 | 35.75502014 |
| 356 | 9.6436  | 23750 | 0.6615 | 14 | 7  | 14.0 | 1 | 7  | 23.49999619 |
| 357 | 12.8860 | 35300 | 0.5515 | 7  | 12 | 14.0 | 1 | 19 | 31.99993324 |
| 358 | 6.5511  | 17350 | 0.6915 | 12 | 12 | 7.5  | 1 | 2  | 17.14999580 |
| 359 | 8.2500  | 21650 | 0.6615 | 7  | 7  | 7.5  | 1 | 9  | 20.25002480 |
| 360 | 1.3792  | 6740  | 0.7915 | 7  | 7  | 14.0 | 0 | 14 | 5.48598480  |
| 361 | 5.2632  | 32275 | 0.6915 | 12 | 14 | 5.0  | 1 | 9  | 25.07504082 |
| 362 | 10.5260 | 33220 | 0.7200 | 14 | 7  | 9.5  | 1 | 16 | 18.21995163 |
| 363 | 10.0000 | 26500 | 0.6215 | 12 | 12 | 7.5  | 1 | 7  | 25.99999619 |
| 364 | 12.5480 | 38700 | 0.5215 | 7  | 12 | 5.0  | 1 | 6  | 34.50007248 |
| 365 | 4.6207  | 15400 | 0.7215 | 7  | 7  | 5.0  | 1 | 22 | 12.39999962 |
| 366 | 1.8540  | 19007 | 0.6915 | 7  | 7  | 3.0  | 0 | 9  | 10.78684998 |
| 367 | 7.4266  | 16771 | 0.7215 | 12 | 7  | 7.5  | 0 | 9  | 16.32300758 |
| 368 | 13.2980 | 31100 | 0.5815 | 16 | 7  | 11.0 | 1 | 14 | 30.50000000 |
| 369 | 26.5780 | 66300 | 0.5000 | 3  | 3  | 7.5  | 1 | 17 | 51.29962540 |
| 370 | 13.9590 | 43550 | 0.4915 | 16 | 12 | 5.0  | 0 | 12 | 33.04997253 |
| 371 | 13.1260 | 37250 | 0.6215 | 7  | 7  | 11.0 | 0 | 13 | 34.75001144 |
| 372 | 7.8883  | 24900 | 0.6615 | 16 | 7  | 14.0 | 0 | 8  | 16.40003967 |
| 373 | 8.6560  | 24200 | 0.6615 | 7  | 14 | 9.5  | 1 | 10 | 19.70007324 |
| 374 | 3.4109  | 16200 | 0.7215 | 10 | 10 | 14.0 | 0 | 16 | 6.60000277  |
| 375 | 4.6256  | 11431 | 0.7515 | 10 | 10 | 7.5  | 0 | 1  | 9.02000809  |

|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 376 | 4.2105  | 13200 | 0.7515 | 10 | 10 | 11.0 | 0 | 6  | 10.40000820 |
| 377 | 4.2708  | 15420 | 0.7715 | 10 | 10 | 9.0  | 1 | 4  | 14.51998806 |
| 378 | 3.3424  | 18400 | 0.6915 | 12 | 12 | 14.0 | 0 | 8  | 17.19999695 |
| 379 | 8.6359  | 43500 | 0.4915 | 10 | 3  | 5.0  | 1 | 4  | 43.00000000 |
| 380 | 6.7581  | 21972 | 0.6915 | 7  | 7  | 7.5  | 1 | 15 | 13.87195969 |
| 381 | 0.5843  | 7774  | 0.7715 | 16 | 16 | 11.0 | 0 | 7  | -0.02905745 |
| 382 | 5.3350  | 24470 | 0.6915 | 7  | 7  | 7.5  | 0 | 14 | 16.76994324 |
| 383 | 4.7101  | 13600 | 0.7215 | 7  | 7  | 7.5  | 0 | 16 | 7.79999971  |
| 384 | 4.9797  | 22500 | 0.7215 | 7  | 0  | 7.5  | 0 | 15 | 14.50006390 |
| 385 | 2.9762  | 13600 | 0.7215 | 7  | 7  | 14.0 | 0 | 23 | 7.90000010  |
| 386 | 12.7440 | 90800 | 0.4415 | 7  | 7  | 7.5  | 0 | 19 | 79.80001068 |
| 387 | 3.8462  | 10776 | 0.7515 | 10 | 10 | 7.5  | 0 | 4  | 7.17597008  |
| 388 | 7.2233  | 19007 | 0.7515 | 10 | 7  | 5.0  | 1 | 12 | 17.50698280 |
| 389 | 8.8077  | 23900 | 0.6615 | 12 | 12 | 14.0 | 1 | 12 | 20.60000038 |
| 390 | 5.3864  | 26060 | 0.6215 | 7  | 7  | 7.5  | 1 | 25 | 18.55991554 |
| 391 | 3.6846  | 13300 | 0.7215 | 7  | 7  | 7.5  | 0 | 14 | 9.30000019  |
| 392 | 1.8437  | 15620 | 0.7215 | 7  | 7  | 7.5  | 0 | 14 | 5.12000751  |
| 393 | 1.3013  | 16500 | 0.7215 | 7  | 7  | 7.5  | 0 | 11 | 14.50003815 |
| 394 | 7.2222  | 20880 | 0.6915 | 14 | 16 | 5.0  | 1 | 7  | 19.79999924 |
| 395 | 7.3529  | 30600 | 0.6615 | 14 | 12 | 9.5  | 1 | 18 | 18.29994965 |
| 396 | 11.8640 | 39000 | 0.6215 | 7  | 10 | 9.0  | 1 | 4  | 33.99993515 |
| 397 | 5.3327  | 15428 | 0.7215 | 7  | 7  | 7.5  | 0 | 37 | 11.62793636 |
| 398 | 5.5000  | 23300 | 0.6615 | 7  | 7  | 7.5  | 0 | 13 | 11.80004597 |
| 399 | 7.2308  | 42100 | 0.5215 | 16 | 16 | 9.5  | 1 | 14 | 39.09997559 |
| 400 | 7.0000  | 36430 | 0.6400 | 12 | 7  | 9.5  | 1 | 17 | 18.43007088 |
| 401 | 7.2137  | 26000 | 0.6915 | 7  | 7  | 9.5  | 1 | 5  | 21.00000000 |
| 402 | 4.5000  | 62060 | 0.7515 | 7  | 7  | 7.5  | 0 | 2  | 59.00000000 |
| 403 | 8.8632  | 28300 | 0.6215 | 12 | 12 | 9.5  | 1 | 0  | 25.29999924 |
| 404 | 9.3333  | 24149 | 0.6615 | 12 | 10 | 7.5  | 1 | 3  | 23.24899101 |
| 405 | 3.8263  | 28141 | 0.6615 | 12 | 10 | 7.5  | 1 | 21 | 24.92808723 |
| 406 | 5.4448  | 23057 | 0.6615 | 10 | 10 | 7.5  | 1 | 20 | 14.78198814 |
| 407 | 8.7634  | 28900 | 0.6215 | 3  | 7  | 7.5  | 1 | 19 | 18.90002823 |
| 408 | 8.4000  | 24000 | 0.6615 | 12 | 10 | 9.5  | 1 | 4  | 21.00000000 |
| 409 | 5.1020  | 13900 | 0.7215 | 12 | 12 | 7.5  | 0 | 19 | 10.00000954 |
| 410 | 7.4101  | 31810 | 0.6915 | 12 | 12 | 5.0  | 1 | 11 | 29.30997467 |
| 411 | 5.3527  | 19840 | 0.6915 | 7  | 7  | 7.5  | 0 | 14 | 13.14003181 |
| 412 | 19.5620 | 25490 | 0.6615 | 16 | 17 | 14.0 | 1 | 8  | 25.08999443 |
| 413 | 5.0783  | 20800 | 0.6915 | 12 | 12 | 7.5  | 0 | 13 | 14.59993172 |
| 414 | 0.5128  | 2400  | 0.8015 | 10 | 16 | 7.5  | 1 | 24 | 1.20000124  |
| 415 | 5.4020  | 32650 | 0.5815 | 10 | 10 | 14.0 | 1 | 1  | 32.00000381 |
| 416 | 7.8646  | 16370 | 0.7215 | 12 | 16 | 11.0 | 1 | 1  | 16.11997032 |
| 417 | 6.0531  | 35500 | 0.5515 | 7  | 7  | 14.0 | 0 | 3  | 26.50002289 |
| 418 | 5.0000  | 15100 | 0.7515 | 7  | 7  | 3.0  | 0 | 4  | 12.75005531 |

|     |         |       |        |    |    |      |   |    |              |
|-----|---------|-------|--------|----|----|------|---|----|--------------|
| 419 | 7.6829  | 14100 | 0.7515 | 7  | 9  | 3.0  | 0 | 21 | 12.899999962 |
| 420 | 6.0386  | 19600 | 0.7215 | 7  | 3  | 14.0 | 0 | 10 | 10.69997501  |
| 421 | 5.8510  | 19434 | 0.7215 | 7  | 7  | 5.0  | 1 | 13 | 14.43403149  |
| 422 | 6.7416  | 23882 | 0.7215 | 7  | 7  | 9.5  | 1 | 9  | 23.70899963  |
| 423 | 8.1081  | 17300 | 0.7215 | 7  | 7  | 7.5  | 0 | 14 | 15.10000420  |
| 424 | 5.3061  | 19772 | 0.7215 | 7  | 7  | 7.5  | 0 | 2  | 18.19997597  |
| 425 | 7.2709  | 35641 | 0.6215 | 7  | 7  | 5.0  | 1 | 21 | 22.64105606  |
| 426 | 8.1776  | 34220 | 0.5815 | 7  | 7  | 7.5  | 1 | 22 | 21.64007950  |
| 427 | 7.1006  | 30000 | 0.5815 | 12 | 16 | 11.0 | 1 | 14 | 23.99998474  |
| 428 | 6.5844  | 18000 | 0.6915 | 12 | 12 | 7.5  | 1 | 7  | 16.00001526  |
| 429 | 7.8529  | 21025 | 0.6615 | 14 | 12 | 7.5  | 1 | 2  | 21.02499962  |
| 430 | 11.9290 | 23600 | 0.6615 | 14 | 7  | 9.5  | 1 | 5  | 23.60000038  |
| 431 | 18.0000 | 22800 | 0.6615 | 12 | 12 | 7.5  | 0 | 12 | 22.79999924  |
| 432 | 10.0220 | 35910 | 0.5815 | 7  | 7  | 7.5  | 1 | 1  | 35.90999985  |
| 433 | 9.3333  | 21700 | 0.6615 | 7  | 7  | 5.0  | 1 | 12 | 21.70000076  |
| 434 | 6.0850  | 21823 | 0.7515 | 7  | 7  | 7.5  | 1 | 4  | 21.82299995  |
| 435 | 5.7054  | 31000 | 0.6615 | 10 | 7  | 11.0 | 1 | 9  | 31.00000000  |
| 436 | 9.1185  | 15300 | 0.7215 | 7  | 7  | 7.5  | 1 | 9  | 15.30000019  |
| 437 | 7.2072  | 12925 | 0.7215 | 9  | 3  | 7.5  | 1 | 6  | 12.92500019  |
| 438 | 5.3146  | 15830 | 0.7515 | 12 | 7  | 5.0  | 0 | 5  | 15.82999992  |
| 439 | 8.2828  | 30200 | 0.6915 | 12 | 12 | 7.5  | 1 | 5  | 30.20000076  |
| 440 | 7.0578  | 16600 | 0.7215 | 10 | 7  | 5.0  | 0 | 8  | 16.60000038  |
| 441 | 6.1659  | 11000 | 0.7515 | 7  | 7  | 7.5  | 1 | 2  | 11.00000000  |
| 442 | 2.7000  | 15000 | 0.7215 | 7  | 10 | 3.0  | 0 | 6  | 15.00000000  |
| 443 | 7.6628  | 20528 | 0.7215 | 7  | 7  | 11.0 | 0 | 0  | 20.52799988  |
| 444 | 1.8491  | 13126 | 0.7515 | 9  | 9  | 14.0 | 0 | 3  | 13.12600040  |
| 445 | 3.8462  | 15550 | 0.7215 | 7  | 14 | 7.5  | 1 | 7  | 15.55000019  |
| 446 | 9.0543  | 18010 | 0.7215 | 3  | 12 | 7.5  | 1 | 3  | 18.01000023  |
| 447 | 9.3750  | 18874 | 0.7215 | 10 | 10 | 14.0 | 0 | 10 | 18.87400055  |
| 448 | 8.3333  | 24800 | 0.6615 | 12 | 12 | 14.0 | 1 | 3  | 24.79999924  |
| 449 | 9.3733  | 17500 | 0.6915 | 12 | 17 | 5.0  | 1 | 2  | 17.50000000  |
| 450 | 4.4818  | 16150 | 0.7215 | 12 | 12 | 7.5  | 1 | 12 | 16.14999962  |
| 451 | 5.3476  | 15189 | 0.7215 | 7  | 3  | 3.0  | 0 | 15 | 15.18900013  |
| 452 | 3.2027  | 6000  | 0.7815 | 7  | 7  | 14.0 | 0 | 5  | 6.00000000   |
| 453 | 12.8010 | 37250 | 0.5515 | 10 | 12 | 9.5  | 1 | 4  | 37.25000000  |
| 454 | 6.9103  | 27760 | 0.6215 | 10 | 10 | 7.5  | 1 | 10 | 27.76000023  |
| 455 | 4.2293  | 9090  | 0.7715 | 7  | 7  | 3.0  | 0 | 1  | 9.09000015   |
| 456 | 4.4479  | 14500 | 0.7215 | 12 | 7  | 7.5  | 1 | 8  | 14.50000000  |
| 457 | 8.0523  | 19700 | 0.7215 | 7  | 7  | 14.0 | 1 | 20 | 19.70000076  |
| 458 | 7.5057  | 16788 | 0.6915 | 10 | 7  | 14.0 | 1 | 4  | 16.78800011  |
| 459 | 7.4747  | 18520 | 0.6915 | 10 | 10 | 11.0 | 1 | 7  | 18.52000046  |
| 460 | 6.3218  | 20950 | 0.6915 | 16 | 10 | 9.5  | 1 | 10 | 20.95000076  |
| 461 | 2.1354  | 7574  | 0.8015 | 7  | 3  | 11.0 | 0 | 3  | 7.57399988   |

|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 462 | 4.2092  | 10027 | 0.7715 | 7  | 7  | 3.0  | 0 | 5  | 10.02700043 |
| 463 | 0.7595  | 5000  | 0.9415 | 12 | 12 | 7.5  | 0 | 10 | 5.00000000  |
| 464 | 4.8077  | 7040  | 0.7915 | 12 | 7  | 3.0  | 0 | 0  | 7.03999996  |
| 465 | 12.7880 | 40800 | 0.5215 | 10 | 7  | 7.5  | 1 | 3  | 40.79999924 |
| 466 | 7.1429  | 16050 | 0.7215 | 12 | 12 | 11.0 | 0 | 10 | 16.04999924 |
| 467 | 15.1520 | 33100 | 0.5815 | 10 | 7  | 11.0 | 1 | 2  | 33.09999847 |
| 468 | 7.9082  | 33856 | 0.7215 | 12 | 12 | 9.5  | 1 | 10 | 33.85599899 |
| 469 | 6.9728  | 20500 | 0.6915 | 12 | 12 | 7.5  | 1 | 4  | 20.50000000 |
| 470 | 4.9181  | 28600 | 0.5815 | 7  | 7  | 5.0  | 1 | 0  | 28.60000038 |
| 471 | 8.3112  | 18750 | 0.6915 | 10 | 10 | 11.0 | 0 | 10 | 18.75000000 |
| 472 | 7.1429  | 20300 | 0.7215 | 7  | 7  | 9.5  | 1 | 5  | 20.29999924 |
| 473 | 5.6889  | 13420 | 0.7215 | 7  | 7  | 5.0  | 0 | 0  | 13.42000008 |
| 474 | 7.0833  | 18400 | 0.7215 | 3  | 3  | 5.0  | 0 | 0  | 18.39999962 |
| 475 | 5.6922  | 16682 | 0.7215 | 10 | 7  | 7.5  | 0 | 19 | 16.68199921 |
| 476 | 11.4000 | 32685 | 0.6215 | 7  | 7  | 7.5  | 1 | 2  | 32.68500137 |
| 477 | 1.4152  | 7050  | 0.8015 | 3  | 3  | 9.5  | 1 | 12 | 7.05000019  |
| 478 | 2.7507  | 10867 | 0.7815 | 12 | 7  | 9.5  | 1 | 5  | 10.86699963 |
| 479 | 6.6182  | 18220 | 0.7215 | 12 | 12 | 9.5  | 1 | 5  | 18.21999931 |
| 480 | 9.2725  | 26613 | 0.6915 | 7  | 7  | 7.5  | 0 | 5  | 26.61300087 |
| 481 | 12.2870 | 25000 | 0.6215 | 12 | 10 | 7.5  | 1 | 10 | 25.00000000 |
| 482 | 2.8549  | 15700 | 0.7515 | 7  | 7  | 7.5  | 1 | 0  | 15.69999981 |
| 483 | 7.9709  | 40250 | 0.5215 | 12 | 10 | 5.0  | 1 | 4  | 40.25000000 |
| 484 | 19.4440 | 73600 | 0.4415 | 12 | 16 | 11.0 | 0 | 3  | 73.59999847 |
| 485 | 1.4806  | 10592 | 0.7515 | 12 | 7  | 7.5  | 1 | 2  | 10.59200001 |
| 486 | 1.8918  | 8000  | 0.7515 | 7  | 7  | 3.0  | 0 | 1  | 8.00000000  |
| 487 | 6.9215  | 13400 | 0.7215 | 7  | 3  | 7.5  | 1 | 0  | 13.39999962 |
| 488 | 10.6920 | 23700 | 0.6615 | 12 | 12 | 14.0 | 1 | 1  | 23.70000076 |
| 489 | 9.9474  | 18900 | 0.6915 | 7  | 7  | 11.0 | 1 | 1  | 18.89999962 |
| 490 | 19.0000 | 48300 | 0.4615 | 7  | 12 | 9.5  | 1 | 6  | 48.29999924 |
| 491 | 7.4882  | 24470 | 0.6615 | 14 | 14 | 9.5  | 1 | 12 | 24.46999931 |
| 492 | 9.2590  | 28630 | 0.6215 | 16 | 7  | 7.5  | 1 | 6  | 28.62999916 |
| 493 | 11.3220 | 25320 | 0.6215 | 12 | 7  | 5.0  | 1 | 9  | 25.31999969 |
| 494 | 6.4470  | 13530 | 0.7515 | 12 | 10 | 7.5  | 1 | 14 | 13.52999973 |
| 495 | 6.5778  | 14800 | 0.7215 | 7  | 7  | 9.0  | 1 | 13 | 14.80000019 |
| 496 | 6.1000  | 17400 | 0.7515 | 12 | 7  | 7.5  | 0 | 8  | 17.39999962 |
| 497 | 4.2308  | 15980 | 0.7815 | 10 | 10 | 3.0  | 0 | 0  | 15.97999954 |
| 498 | 2.2170  | 16576 | 0.7215 | 7  | 7  | 7.5  | 0 | 1  | 16.57600021 |
| 499 | 6.5189  | 21850 | 0.6915 | 12 | 7  | 11.0 | 1 | 3  | 21.85000038 |
| 500 | 6.4923  | 14600 | 0.7215 | 7  | 7  | 14.0 | 1 | 13 | 14.60000038 |
| 501 | 11.3640 | 21600 | 0.6615 | 12 | 12 | 7.5  | 1 | 3  | 21.60000038 |
| 502 | 9.8765  | 24000 | 0.6615 | 12 | 12 | 7.5  | 1 | 8  | 24.00000000 |
| 503 | 7.6576  | 20883 | 0.6915 | 7  | 7  | 7.5  | 1 | 8  | 20.88299942 |
| 504 | 8.3017  | 19500 | 0.6915 | 7  | 7  | 14.0 | 0 | 18 | 19.50000000 |

|     |         |       |        |    |    |      |   |    |              |
|-----|---------|-------|--------|----|----|------|---|----|--------------|
| 505 | 14.1140 | 42800 | 0.6215 | 14 | 12 | 11.0 | 1 | 2  | 42.799999924 |
| 506 | 16.0000 | 41500 | 0.5215 | 7  | 7  | 7.5  | 0 | 3  | 41.50000000  |
| 507 | 11.2910 | 18965 | 0.6915 | 12 | 12 | 14.0 | 1 | 5  | 18.96500015  |
| 508 | 2.3395  | 16100 | 0.7215 | 12 | 10 | 9.5  | 1 | 2  | 16.10000038  |
| 509 | 7.7994  | 14700 | 0.7215 | 12 | 17 | 7.5  | 1 | 10 | 14.69999981  |
| 510 | 6.0000  | 18800 | 0.7215 | 7  | 7  | 7.5  | 1 | 30 | 18.79999924  |
| 511 | 6.6893  | 14750 | 0.7515 | 10 | 7  | 11.0 | 1 | 1  | 14.75000000  |
| 512 | 8.5366  | 21000 | 0.6915 | 12 | 7  | 14.0 | 1 | 5  | 21.00000000  |
| 513 | 13.8300 | 35400 | 0.6215 | 0  | 7  | 7.5  | 1 | 8  | 35.40000153  |
| 514 | 1.4800  | 10700 | 0.7515 | 7  | 7  | 7.5  | 0 | 0  | 10.69999981  |
| 515 | 8.5714  | 24500 | 0.6615 | 7  | 7  | 9.5  | 1 | 4  | 24.50000000  |
| 516 | 8.2299  | 17045 | 0.7215 | 7  | 7  | 9.5  | 1 | 2  | 17.04500008  |
| 517 | 8.3877  | 18800 | 0.6915 | 7  | 7  | 7.5  | 1 | 30 | 18.79999924  |
| 518 | 7.3651  | 14000 | 0.7215 | 10 | 7  | 14.0 | 1 | 25 | 14.00000000  |
| 519 | 3.4415  | 18214 | 0.7215 | 7  | 0  | 3.0  | 0 | 3  | 18.21400070  |
| 520 | 3.3537  | 20177 | 0.7515 | 7  | 7  | 7.5  | 1 | 20 | 20.17700005  |
| 521 | 2.9762  | 8300  | 0.7815 | 0  | 7  | 7.5  | 1 | 20 | 8.30000019   |
| 522 | 5.1810  | 14200 | 0.7515 | 14 | 9  | 7.5  | 1 | 0  | 14.19999981  |
| 523 | 10.2930 | 21768 | 0.6915 | 12 | 12 | 7.5  | 0 | 15 | 21.76799965  |
| 524 | 13.2430 | 29553 | 0.5815 | 10 | 7  | 14.0 | 1 | 10 | 29.55299950  |
| 525 | 3.6458  | 4350  | 0.9415 | 7  | 7  | 7.5  | 0 | 4  | 4.34999990   |
| 526 | 10.4070 | 24000 | 0.6615 | 7  | 7  | 11.0 | 1 | 3  | 24.00000000  |
| 527 | 8.2117  | 18300 | 0.6915 | 7  | 7  | 7.5  | 1 | 10 | 18.29999924  |
| 528 | 8.6735  | 17200 | 0.7215 | 7  | 3  | 7.5  | 1 | 9  | 17.20000076  |
| 529 | 8.3208  | 16476 | 0.6915 | 7  | 7  | 14.0 | 0 | 7  | 16.47599983  |
| 530 | 4.2870  | 13400 | 0.7515 | 0  | 0  | 14.0 | 0 | 12 | 13.39999962  |
| 531 | 10.5000 | 44988 | 0.5215 | 3  | 3  | 14.0 | 0 | 0  | 44.98799896  |
| 532 | 7.9787  | 18200 | 0.6915 | 12 | 12 | 9.0  | 1 | 16 | 18.20000076  |
| 533 | 11.8140 | 28000 | 0.6215 | 12 | 12 | 14.0 | 1 | 4  | 28.00000000  |
| 534 | 6.1111  | 11550 | 0.7515 | 12 | 12 | 7.5  | 1 | 7  | 11.55000019  |
| 535 | 12.5780 | 28450 | 0.6215 | 12 | 7  | 14.0 | 1 | 7  | 28.45000076  |
| 536 | 11.2440 | 15096 | 0.7515 | 7  | 10 | 7.5  | 1 | 14 | 15.09599972  |
| 537 | 2.7408  | 8009  | 0.7815 | 7  | 7  | 14.0 | 0 | 2  | 8.00899982   |
| 538 | 4.4444  | 10040 | 0.7515 | 0  | 0  | 3.0  | 1 | 20 | 10.03999996  |
| 539 | 5.8267  | 16700 | 0.7215 | 12 | 12 | 7.5  | 1 | 5  | 16.70000076  |
| 540 | 2.3478  | 8400  | 0.7815 | 12 | 7  | 3.0  | 0 | 10 | 8.39999962   |
| 541 | 4.4755  | 13000 | 0.7215 | 0  | 0  | 3.0  | 0 | 20 | 13.00000000  |
| 542 | 8.4986  | 17970 | 0.7215 | 7  | 7  | 7.5  | 1 | 10 | 17.96999931  |
| 543 | 7.1825  | 18450 | 0.7215 | 14 | 17 | 5.0  | 0 | 8  | 18.45000076  |
| 544 | 10.8700 | 31000 | 0.6615 | 12 | 7  | 14.0 | 1 | 11 | 31.00000000  |
| 545 | 7.1222  | 24135 | 0.7215 | 10 | 7  | 7.5  | 1 | 3  | 24.13500023  |
| 546 | 10.6592 | 31700 | 0.5815 | 12 | 12 | 7.5  | 0 | 6  | 31.70000076  |
| 547 | 3.2762  | 10190 | 0.7915 | 3  | 3  | 14.0 | 0 | 4  | 10.18999958  |

|     |         |       |        |    |    |      |   |    |              |
|-----|---------|-------|--------|----|----|------|---|----|--------------|
| 548 | 7.7521  | 21574 | 0.7215 | 10 | 10 | 14.0 | 0 | 4  | 21.573999940 |
| 549 | 11.9450 | 26680 | 0.6215 | 3  | 3  | 7.5  | 1 | 9  | 26.680000031 |
| 550 | 4.6154  | 17700 | 0.7515 | 7  | 9  | 11.0 | 1 | 10 | 17.700000076 |
| 551 | 13.0210 | 29400 | 0.6215 | 12 | 12 | 14.0 | 1 | 3  | 29.399999962 |
| 552 | 2.6667  | 22159 | 0.7515 | 7  | 7  | 7.5  | 0 | 2  | 22.159000040 |
| 553 | 8.8333  | 35000 | 0.5815 | 12 | 12 | 11.0 | 0 | 2  | 35.000000000 |
| 554 | 2.3669  | 8630  | 0.7915 | 16 | 16 | 5.0  | 1 | 0  | 8.630000011  |
| 555 | 5.0000  | 17080 | 0.7515 | 7  | 0  | 14.0 | 1 | 8  | 17.079999992 |
| 556 | 7.4597  | 32500 | 0.7215 | 10 | 7  | 14.0 | 1 | 6  | 32.500000000 |
| 557 | 7.7519  | 16000 | 0.7215 | 7  | 7  | 11.0 | 1 | 15 | 16.000000000 |
| 558 | 5.4054  | 18850 | 0.7515 | 12 | 10 | 14.0 | 1 | 15 | 18.850000038 |
| 559 | 6.1239  | 17500 | 0.6915 | 9  | 9  | 9.5  | 1 | 9  | 17.500000000 |
| 560 | 8.3369  | 19392 | 0.6915 | 7  | 12 | 14.0 | 0 | 8  | 19.392000020 |
| 561 | 7.1277  | 14450 | 0.7215 | 7  | 10 | 7.5  | 1 | 18 | 14.449999981 |
| 562 | 6.1204  | 21800 | 0.6915 | 0  | 0  | 7.5  | 1 | 3  | 21.799999924 |
| 563 | 3.1111  | 7700  | 0.7515 | 7  | 7  | 14.0 | 1 | 10 | 7.699999981  |
| 564 | 12.1610 | 31800 | 0.5815 | 7  | 7  | 11.0 | 0 | 6  | 31.799999924 |
| 565 | 5.3846  | 17258 | 0.7515 | 7  | 7  | 9.5  | 1 | 20 | 17.257999942 |
| 566 | 3.9838  | 13399 | 0.7515 | 10 | 12 | 9.5  | 0 | 8  | 13.399000017 |
| 567 | 7.4697  | 16073 | 0.7215 | 12 | 16 | 11.0 | 0 | 3  | 16.072999995 |
| 568 | 11.4110 | 23260 | 0.6615 | 7  | 7  | 7.5  | 1 | 4  | 23.260000023 |
| 569 | 12.9360 | 37300 | 0.5515 | 12 | 12 | 14.0 | 1 | 13 | 37.299999924 |
| 570 | 5.6122  | 11000 | 0.7515 | 12 | 7  | 11.0 | 1 | 4  | 11.000000000 |
| 571 | 6.8099  | 13075 | 0.7515 | 7  | 7  | 14.0 | 1 | 17 | 13.074999981 |
| 572 | 8.5066  | 13700 | 0.7215 | 7  | 7  | 9.5  | 1 | 4  | 13.699999981 |
| 573 | 5.5080  | 25100 | 0.6615 | 7  | 10 | 5.0  | 0 | 0  | 25.100000038 |
| 574 | 7.2285  | 18600 | 0.6915 | 12 | 16 | 5.0  | 1 | 15 | 18.600000038 |
| 575 | 9.4545  | 29000 | 0.6215 | 16 | 16 | 9.5  | 0 | 11 | 29.000000000 |
| 576 | 8.9835  | 19237 | 0.6915 | 7  | 7  | 9.5  | 1 | 23 | 19.236999951 |
| 577 | 5.9846  | 19855 | 0.7215 | 12 | 14 | 7.5  | 1 | 1  | 19.854999954 |
| 578 | 3.9629  | 9450  | 0.7515 | 12 | 7  | 9.5  | 0 | 5  | 9.449999981  |
| 579 | 7.0575  | 30000 | 0.5815 | 7  | 7  | 7.5  | 0 | 1  | 30.000000000 |
| 580 | 7.1565  | 15000 | 0.7215 | 10 | 10 | 14.0 | 1 | 5  | 15.000000000 |
| 581 | 4.0145  | 24701 | 0.6615 | 12 | 12 | 9.5  | 1 | 3  | 24.701000021 |
| 582 | 3.8829  | 15900 | 0.7215 | 10 | 14 | 11.0 | 0 | 3  | 15.899999962 |
| 583 | 7.9787  | 16240 | 0.7215 | 7  | 7  | 11.0 | 0 | 19 | 16.239999977 |
| 584 | 5.0366  | 21100 | 0.7515 | 12 | 12 | 9.5  | 1 | 20 | 21.100000038 |
| 585 | 7.0769  | 23000 | 0.6615 | 12 | 12 | 7.5  | 1 | 5  | 23.000000000 |
| 586 | 3.6184  | 6340  | 0.7715 | 7  | 7  | 14.0 | 0 | 0  | 6.340000015  |
| 587 | 13.4660 | 42250 | 0.4915 | 10 | 10 | 5.0  | 1 | 3  | 42.250000000 |
| 588 | 14.5310 | 14694 | 0.7215 | 12 | 10 | 11.0 | 1 | 3  | 14.694000024 |
| 589 | 6.8000  | 21417 | 0.7215 | 12 | 12 | 9.5  | 1 | 7  | 21.416999982 |
| 590 | 6.6667  | 20200 | 0.6615 | 7  | 12 | 7.5  | 1 | 7  | 20.200000076 |



|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 591 | 5.9172  | 12090 | 0.7215 | 7  | 7  | 9.5  | 1 | 1  | 12.09000015 |
| 592 | 10.2400 | 24760 | 0.6615 | 12 | 7  | 5.0  | 1 | 13 | 24.76000023 |
| 593 | 8.1566  | 23000 | 0.6915 | 7  | 3  | 3.0  | 0 | 0  | 23.00000000 |
| 594 | 6.6775  | 19365 | 0.7215 | 3  | 3  | 11.0 | 1 | 0  | 19.36499977 |
| 595 | 0.9615  | 5550  | 0.9415 | 7  | 7  | 3.0  | 0 | 12 | 5.55000019  |
| 596 | 16.9070 | 68035 | 0.4415 | 7  | 3  | 7.5  | 1 | 0  | 68.03500366 |
| 597 | 13.5700 | 29300 | 0.6215 | 10 | 14 | 7.5  | 1 | 5  | 29.29999924 |
| 598 | 8.9329  | 18500 | 0.6915 | 7  | 7  | 7.5  | 1 | 45 | 18.50000000 |
| 599 | 4.7372  | 22582 | 0.7215 | 17 | 7  | 11.0 | 0 | 10 | 22.58200073 |
| 600 | 8.5106  | 21500 | 0.7215 | 7  | 7  | 7.5  | 1 | 2  | 21.50000000 |
| 601 | 5.2511  | 28070 | 0.7515 | 7  | 7  | 7.5  | 0 | 3  | 28.06999969 |
| 602 | 21.7860 | 50300 | 0.4415 | 12 | 12 | 14.0 | 1 | 1  | 50.29999924 |
| 603 | 7.9125  | 23500 | 0.6615 | 12 | 12 | 14.0 | 1 | 5  | 23.50000000 |
| 604 | 7.1083  | 15500 | 0.7515 | 7  | 9  | 14.0 | 0 | 10 | 15.50000000 |
| 605 | 5.0434  | 13440 | 0.7715 | 7  | 0  | 5.0  | 0 | 4  | 13.43999958 |
| 606 | 2.2442  | 8100  | 0.7815 | 12 | 12 | 11.0 | 0 | 7  | 8.10000038  |
| 607 | 8.5069  | 9800  | 0.7515 | 7  | 12 | 9.5  | 1 | 9  | 9.80000019  |
| 608 | 7.5758  | 20300 | 0.6915 | 7  | 12 | 5.0  | 1 | 5  | 20.29999924 |
| 609 | 5.8824  | 15000 | 0.7515 | 7  | 7  | 14.0 | 1 | 4  | 15.00000000 |
| 610 | 40.4410 | 56100 | 0.4415 | 9  | 9  | 5.0  | 1 | 11 | 56.09999847 |
| 611 | 6.2339  | 22846 | 0.7215 | 12 | 7  | 5.0  | 1 | 9  | 22.84600067 |
| 612 | 9.2971  | 22225 | 0.6915 | 7  | 12 | 5.0  | 1 | 4  | 22.22500038 |
| 613 | 0.7038  | 17635 | 0.9415 | 12 | 7  | 7.5  | 1 | 2  | 17.63500023 |
| 614 | 2.5425  | 18500 | 0.6915 | 3  | 12 | 7.5  | 0 | 23 | 18.50000000 |
| 615 | 5.0833  | 13390 | 0.7515 | 12 | 12 | 11.0 | 0 | 3  | 13.39000034 |
| 616 | 7.6843  | 15150 | 0.7215 | 7  | 7  | 7.5  | 1 | 15 | 15.14999962 |
| 617 | 4.0625  | 16200 | 0.7815 | 7  | 3  | 7.5  | 0 | 8  | 16.20000076 |
| 618 | 6.5106  | 33920 | 0.6615 | 12 | 12 | 14.0 | 1 | 3  | 33.91999817 |
| 619 | 2.9510  | 14000 | 0.7215 | 7  | 12 | 7.5  | 0 | 25 | 14.00000000 |
| 620 | 5.6738  | 16736 | 0.7515 | 12 | 3  | 11.0 | 1 | 2  | 16.73600006 |
| 621 | 12.7660 | 30650 | 0.6615 | 12 | 12 | 11.0 | 1 | 0  | 30.64999962 |
| 622 | 6.0000  | 12400 | 0.7515 | 7  | 7  | 11.0 | 0 | 19 | 12.39999962 |
| 623 | 9.2955  | 19022 | 0.6915 | 7  | 10 | 9.5  | 1 | 3  | 19.02199936 |
| 624 | 5.1324  | 11203 | 0.7515 | 7  | 7  | 5.0  | 0 | 7  | 11.20300007 |
| 625 | 9.0659  | 19876 | 0.6915 | 7  | 14 | 7.5  | 1 | 1  | 19.87599945 |
| 626 | 11.9310 | 57000 | 0.4415 | 7  | 12 | 14.0 | 1 | 9  | 57.00000000 |
| 627 | 6.7164  | 18290 | 0.6915 | 10 | 10 | 11.0 | 1 | 3  | 18.29000092 |
| 628 | 4.5851  | 20220 | 0.6915 | 14 | 12 | 11.0 | 1 | 8  | 20.21999931 |
| 629 | 9.2567  | 22150 | 0.6915 | 7  | 7  | 14.0 | 1 | 0  | 22.14999962 |
| 630 | 8.5656  | 30623 | 0.6215 | 10 | 10 | 7.5  | 1 | 5  | 30.62299919 |
| 631 | 6.7407  | 9380  | 0.7515 | 3  | 3  | 14.0 | 1 | 20 | 9.38000011  |
| 632 | 9.8788  | 22000 | 0.6915 | 7  | 7  | 5.0  | 1 | 3  | 22.00000000 |
| 633 | 9.3750  | 23675 | 0.6615 | 12 | 10 | 7.5  | 1 | 12 | 23.67499924 |

|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 634 | 6.2770  | 33671 | 0.7215 | 7  | 7  | 14.0 | 1 | 5  | 33.67100143 |
| 635 | 6.4241  | 12367 | 0.7515 | 7  | 7  | 7.5  | 0 | 1  | 12.36699963 |
| 636 | 8.3718  | 21950 | 0.6615 | 7  | 7  | 5.0  | 0 | 0  | 21.95000076 |
| 637 | 12.2200 | 32000 | 0.5815 | 7  | 7  | 9.5  | 1 | 7  | 32.00000000 |
| 638 | 3.5612  | 22610 | 0.7215 | 10 | 10 | 9.5  | 1 | 13 | 22.61000061 |
| 639 | 8.8670  | 12092 | 0.7515 | 7  | 7  | 3.0  | 0 | 3  | 12.09200001 |
| 640 | 1.8515  | 3777  | 0.9415 | 7  | 7  | 11.0 | 0 | 0  | 3.77699995  |
| 641 | 8.0769  | 36000 | 0.5515 | 16 | 14 | 3.0  | 0 | 2  | 36.00000000 |
| 642 | 8.9796  | 26900 | 0.6615 | 12 | 16 | 7.5  | 0 | 0  | 26.89999962 |
| 643 | 6.6618  | 32242 | 0.6615 | 7  | 7  | 11.0 | 1 | 2  | 32.24200058 |
| 644 | 11.1070 | 35020 | 0.5815 | 16 | 17 | 5.0  | 1 | 1  | 35.02000046 |
| 645 | 14.0770 | 37600 | 0.5515 | 7  | 7  | 9.0  | 1 | 10 | 37.59999847 |
| 646 | 0.4121  | 1500  | 0.9415 | 7  | 7  | 7.5  | 1 | 10 | 1.50000000  |
| 647 | 23.8100 | 96000 | 0.4415 | 12 | 12 | 5.0  | 1 | 1  | 96.00000000 |
| 648 | 9.5745  | 18150 | 0.6915 | 7  | 7  | 11.0 | 0 | 3  | 18.14999962 |
| 649 | 1.9286  | 15500 | 0.7215 | 7  | 7  | 3.0  | 0 | 32 | 15.50000000 |
| 650 | 2.5783  | 14000 | 0.7215 | 7  | 7  | 3.0  | 0 | 0  | 14.00000000 |
| 651 | 7.2274  | 14756 | 0.7215 | 7  | 7  | 7.5  | 1 | 7  | 14.75599957 |
| 652 | 8.8000  | 22000 | 0.6615 | 12 | 10 | 5.0  | 1 | 5  | 22.00000000 |
| 653 | 7.7500  | 24466 | 0.6615 | 7  | 7  | 11.0 | 1 | 2  | 24.46599960 |
| 654 | 14.6880 | 24400 | 0.6615 | 12 | 12 | 7.5  | 1 | 5  | 24.39999962 |
| 655 | 10.4870 | 24000 | 0.6615 | 7  | 7  | 9.5  | 1 | 3  | 24.00000000 |
| 656 | 4.0253  | 15500 | 0.7215 | 12 | 9  | 11.0 | 0 | 25 | 15.50000000 |
| 657 | 11.7650 | 30800 | 0.6215 | 14 | 12 | 7.5  | 0 | 0  | 30.79999924 |
| 658 | 9.5238  | 10660 | 0.7515 | 7  | 7  | 14.0 | 1 | 3  | 10.65999985 |
| 659 | 6.9079  | 13350 | 0.7215 | 7  | 7  | 11.0 | 0 | 10 | 13.35000038 |
| 660 | 5.1510  | 10090 | 0.7515 | 12 | 3  | 11.0 | 0 | 10 | 10.09000015 |
| 661 | 20.4960 | 55600 | 0.4415 | 16 | 14 | 14.0 | 1 | 7  | 55.59999847 |
| 662 | 13.5550 | 25700 | 0.6615 | 12 | 12 | 9.5  | 1 | 5  | 25.70000076 |
| 663 | 14.7960 | 29000 | 0.5815 | 7  | 3  | 5.0  | 1 | 15 | 29.00000000 |
| 664 | 1.6905  | 7286  | 0.7815 | 10 | 7  | 3.0  | 0 | 1  | 7.28599977  |
| 665 | 7.2296  | 37752 | 0.5215 | 7  | 7  | 3.0  | 0 | 5  | 37.75199890 |
| 666 | 4.1152  | 13072 | 0.7515 | 3  | 3  | 14.0 | 0 | 9  | 13.07199955 |
| 667 | 2.9990  | 7044  | 0.7715 | 3  | 3  | 14.0 | 0 | 18 | 7.04400015  |
| 668 | 8.0492  | 18200 | 0.6915 | 7  | 7  | 14.0 | 1 | 1  | 18.20000076 |
| 669 | 8.5770  | 27000 | 0.6215 | 12 | 7  | 3.0  | 0 | 0  | 27.00000000 |
| 670 | 9.3235  | 30300 | 0.5815 | 10 | 12 | 3.0  | 0 | 6  | 30.29999924 |
| 671 | 4.7059  | 12000 | 0.7515 | 3  | 7  | 14.0 | 0 | 1  | 12.00000000 |
| 672 | 9.1346  | 31500 | 0.6615 | 16 | 17 | 3.0  | 0 | 2  | 31.50000000 |
| 673 | 7.7670  | 27092 | 0.7215 | 10 | 10 | 5.0  | 1 | 15 | 27.09199905 |
| 674 | 4.1269  | 20968 | 0.7515 | 7  | 7  | 3.0  | 0 | 25 | 20.96800041 |
| 675 | 10.0000 | 27000 | 0.6615 | 17 | 7  | 14.0 | 1 | 1  | 27.00000000 |
| 676 | 4.0727  | 11225 | 0.7515 | 7  | 10 | 7.5  | 1 | 0  | 11.22500038 |

|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 677 | 7.8529  | 37700 | 0.5815 | 3  | 3  | 7.5  | 0 | 0  | 37.70000076 |
| 678 | 7.8168  | 28200 | 0.6615 | 12 | 16 | 7.5  | 1 | 0  | 28.20000076 |
| 679 | 9.1667  | 34000 | 0.6615 | 7  | 12 | 5.0  | 0 | 8  | 34.00000000 |
| 680 | 29.6440 | 63200 | 0.4415 | 12 | 7  | 9.5  | 1 | 22 | 63.20000076 |
| 681 | 4.0761  | 7500  | 0.7915 | 3  | 3  | 7.5  | 1 | 5  | 7.50000000  |
| 682 | 8.3620  | 17410 | 0.7215 | 10 | 10 | 9.5  | 1 | 10 | 17.40999985 |
| 683 | 12.0620 | 51000 | 0.4415 | 16 | 17 | 9.0  | 1 | 1  | 51.00000000 |
| 684 | 2.3251  | 12916 | 0.7515 | 10 | 7  | 3.0  | 0 | 1  | 12.91600037 |
| 685 | 10.0100 | 21900 | 0.6615 | 7  | 7  | 5.0  | 1 | 6  | 21.89999962 |
| 686 | 5.2734  | 17640 | 0.7515 | 7  | 7  | 5.0  | 0 | 4  | 17.63999939 |
| 687 | 10.4170 | 20000 | 0.6915 | 14 | 16 | 14.0 | 0 | 6  | 20.00000000 |
| 688 | 7.5000  | 15000 | 0.7215 | 7  | 7  | 14.0 | 1 | 0  | 15.00000000 |
| 689 | 6.3521  | 14060 | 0.7215 | 10 | 12 | 5.0  | 0 | 1  | 14.06000042 |
| 690 | 3.8071  | 15825 | 0.7215 | 7  | 14 | 9.5  | 0 | 3  | 15.82499981 |
| 691 | 9.9099  | 16510 | 0.7215 | 3  | 16 | 9.5  | 1 | 15 | 16.51000023 |
| 692 | 2.6701  | 13000 | 0.7215 | 12 | 12 | 7.5  | 0 | 33 | 13.00000000 |
| 693 | 4.3956  | 10000 | 0.7515 | 7  | 7  | 5.0  | 1 | 2  | 10.00000000 |
| 694 | 7.9710  | 22000 | 0.6615 | 12 | 12 | 7.5  | 1 | 1  | 22.00000000 |
| 695 | 15.4290 | 29800 | 0.5815 | 7  | 7  | 7.5  | 1 | 10 | 29.79999924 |
| 696 | 1.9854  | 15000 | 0.7215 | 7  | 7  | 5.0  | 1 | 0  | 15.00000000 |
| 697 | 7.2562  | 22300 | 0.7215 | 10 | 14 | 9.5  | 1 | 14 | 22.29999924 |
| 698 | 7.0352  | 14550 | 0.7215 | 3  | 16 | 7.5  | 1 | 15 | 14.55000019 |
| 699 | 8.1347  | 19730 | 0.6915 | 14 | 12 | 7.5  | 1 | 15 | 19.72999954 |
| 700 | 11.9810 | 35000 | 0.5515 | 12 | 12 | 7.5  | 1 | 10 | 35.00000000 |
| 701 | 5.9922  | 21014 | 0.6615 | 7  | 3  | 7.5  | 1 | 6  | 21.01399994 |
| 702 | 4.1458  | 10876 | 0.7515 | 14 | 7  | 7.5  | 0 | 18 | 10.87600040 |
| 703 | 8.5102  | 27850 | 0.6215 | 12 | 10 | 7.5  | 0 | 15 | 27.85000038 |
| 704 | 2.9631  | 9560  | 0.7515 | 0  | 3  | 3.0  | 0 | 30 | 9.56000042  |
| 705 | 8.8149  | 30300 | 0.6215 | 7  | 7  | 7.5  | 0 | 15 | 30.29999924 |
| 706 | 2.4955  | 7720  | 0.7815 | 7  | 7  | 7.5  | 0 | 10 | 7.71999979  |
| 707 | 4.8843  | 10550 | 0.7515 | 10 | 7  | 7.5  | 1 | 0  | 10.55000019 |
| 708 | 10.2000 | 24106 | 0.6615 | 12 | 7  | 9.5  | 1 | 0  | 24.10600090 |
| 709 | 10.0000 | 22995 | 0.6615 | 12 | 14 | 9.5  | 1 | 4  | 22.99500084 |
| 710 | 5.3571  | 6000  | 0.8015 | 12 | 12 | 9.5  | 1 | 0  | 6.00000000  |
| 711 | 9.7959  | 24350 | 0.6615 | 14 | 14 | 9.5  | 1 | 3  | 24.35000038 |
| 712 | 1.3741  | 7608  | 0.7715 | 7  | 7  | 7.5  | 0 | 20 | 7.60799980  |
| 713 | 3.4630  | 28200 | 0.7215 | 7  | 7  | 3.0  | 0 | 3  | 28.20000076 |
| 714 | 5.0408  | 16150 | 0.7215 | 3  | 7  | 3.0  | 0 | 1  | 16.14999962 |
| 715 | 16.6670 | 51200 | 0.4415 | 7  | 10 | 7.5  | 1 | 5  | 51.20000076 |
| 716 | 4.3294  | 12646 | 0.7515 | 7  | 7  | 5.0  | 1 | 7  | 12.64599991 |
| 717 | 10.1930 | 19000 | 0.6915 | 7  | 7  | 11.0 | 1 | 6  | 19.00000000 |
| 718 | 7.5833  | 19000 | 0.7215 | 7  | 7  | 7.5  | 1 | 2  | 19.00000000 |
| 719 | 4.1204  | 14400 | 0.7515 | 3  | 3  | 7.5  | 0 | 0  | 14.39999962 |

|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 720 | 4.8077  | 7232  | 0.9415 | 3  | 7  | 11.0 | 1 | 10 | 7.23199987  |
| 721 | 3.1531  | 21943 | 0.7515 | 7  | 10 | 9.5  | 1 | 6  | 21.94300079 |
| 722 | 19.0000 | 47500 | 0.4615 | 7  | 10 | 7.5  | 1 | 4  | 47.50000000 |
| 723 | 6.0535  | 28900 | 0.6215 | 12 | 7  | 7.5  | 1 | 8  | 28.89999962 |
| 724 | 3.7875  | 12400 | 0.7715 | 7  | 7  | 7.5  | 0 | 18 | 12.39999962 |
| 725 | 2.9287  | 6531  | 0.7815 | 0  | 0  | 7.5  | 0 | 7  | 6.53100014  |
| 726 | 9.2972  | 22422 | 0.6915 | 3  | 7  | 11.0 | 1 | 15 | 22.42200089 |
| 727 | 9.3827  | 22200 | 0.6615 | 7  | 7  | 11.0 | 1 | 7  | 22.20000076 |
| 728 | 26.5310 | 77000 | 0.4415 | 7  | 14 | 14.0 | 1 | 8  | 77.00000000 |
| 729 | 40.5090 | 88000 | 0.4415 | 10 | 10 | 14.0 | 1 | 8  | 88.00000000 |
| 730 | 15.1600 | 26040 | 0.6215 | 12 | 10 | 11.0 | 0 | 3  | 26.04000092 |
| 731 | 18.9640 | 63500 | 0.4415 | 7  | 7  | 7.5  | 1 | 10 | 63.50000000 |
| 732 | 5.4152  | 12100 | 0.7515 | 10 | 10 | 7.5  | 0 | 9  | 12.10000038 |
| 733 | 1.9988  | 17505 | 0.7515 | 12 | 7  | 7.5  | 1 | 24 | 17.50499916 |
| 734 | 8.0000  | 18000 | 0.6915 | 10 | 7  | 7.5  | 0 | 12 | 18.00000000 |
| 735 | 11.1530 | 28069 | 0.6615 | 12 | 12 | 11.0 | 1 | 2  | 28.06900024 |
| 736 | 5.9524  | 14000 | 0.7515 | 12 | 14 | 14.0 | 1 | 6  | 14.00000000 |
| 737 | 2.1194  | 8117  | 0.7515 | 10 | 3  | 7.5  | 1 | 18 | 8.11699963  |
| 738 | 3.8384  | 11895 | 0.7715 | 7  | 7  | 5.0  | 1 | 17 | 11.89500046 |
| 739 | 17.3610 | 45250 | 0.4915 | 16 | 16 | 5.0  | 1 | 7  | 45.25000000 |
| 740 | 8.0092  | 31106 | 0.6915 | 7  | 10 | 9.5  | 1 | 6  | 31.10600090 |
| 741 | 3.0000  | 4000  | 0.8015 | 12 | 7  | 9.5  | 1 | 10 | 4.00000000  |
| 742 | 10.5890 | 40500 | 0.5815 | 7  | 7  | 7.5  | 1 | 5  | 40.50000000 |
| 743 | 10.9130 | 21620 | 0.7215 | 10 | 7  | 7.5  | 1 | 7  | 21.62000084 |
| 744 | 5.6033  | 23426 | 0.7215 | 0  | 0  | 7.5  | 1 | 11 | 23.42600060 |
| 745 | 7.9365  | 26000 | 0.6615 | 3  | 3  | 11.0 | 1 | 14 | 26.00000000 |
| 746 | 2.9476  | 7840  | 0.9415 | 7  | 0  | 9.5  | 1 | 5  | 7.84000015  |
| 747 | 2.0562  | 6800  | 0.7915 | 7  | 3  | 7.5  | 0 | 2  | 6.80000019  |
| 748 | 1.3013  | 5330  | 0.7915 | 7  | 12 | 14.0 | 0 | 4  | 5.32999992  |
| 749 | 9.2715  | 28200 | 0.6215 | 10 | 10 | 9.5  | 1 | 5  | 28.20000076 |
| 750 | 4.8638  | 10000 | 0.7715 | 12 | 12 | 7.5  | 0 | 14 | 10.00000000 |
| 751 | 1.0898  | 9952  | 0.7515 | 10 | 3  | 7.5  | 0 | 4  | 9.95199966  |
| 752 | 12.4400 | 24984 | 0.6215 | 12 | 12 | 14.0 | 1 | 15 | 24.98399925 |
| 753 | 6.0897  | 28363 | 0.6915 | 7  | 7  | 11.0 | 1 | 12 | 28.36300087 |

|   | lwage      | expersq | loghours | d_hours |
|---|------------|---------|----------|---------|
| 1 | 1.21015370 | 196     | 7.383989 | 1       |
| 2 | 0.32851210 | 25      | 7.412160 | 1       |
| 3 | 1.51413774 | 225     | 7.590852 | 1       |
| 4 | 0.09212332 | 36      | 6.122493 | 1       |
| 5 | 1.52427220 | 49      | 7.357556 | 1       |
| 6 | 1.55648005 | 1089    | 7.616776 | 1       |
| 7 | 2.12025952 | 121     | 7.272398 | 1       |
| 8 | 2.05963421 | 1225    | 6.927558 | 1       |

|    |            |      |          |   |
|----|------------|------|----------|---|
| 9  | 0.75433636 | 576  | 7.284821 | 1 |
| 10 | 1.54489934 | 441  | 7.377759 | 1 |
| 11 | 1.40192163 | 225  | 7.585281 | 1 |
| 12 | 1.52427220 | 196  | 7.580700 | 1 |
| 13 | 0.73395324 | 0    | 5.480639 | 1 |
| 14 | 0.81836909 | 196  | 6.904751 | 1 |
| 15 | 1.30283117 | 36   | 7.521859 | 1 |
| 16 | 0.29802838 | 81   | 7.109879 | 1 |
| 17 | 1.16760957 | 400  | 7.244228 | 1 |
| 18 | 1.64383936 | 36   | 6.461468 | 1 |
| 19 | 0.69314718 | 529  | 7.600902 | 1 |
| 20 | 2.02193165 | 81   | 7.188413 | 1 |
| 21 | 1.25424755 | 25   | 7.703008 | 1 |
| 22 | 1.27295768 | 121  | 7.426549 | 1 |
| 23 | 1.17865503 | 324  | 7.377759 | 1 |
| 24 | 1.17865503 | 225  | 6.684612 | 1 |
| 25 | 0.76755869 | 16   | 7.578145 | 1 |
| 26 | 1.33181179 | 441  | 6.492240 | 1 |
| 27 | 1.38629436 | 961  | 6.263398 | 1 |
| 28 | 1.55326962 | 81   | 7.551712 | 1 |
| 29 | 1.98181486 | 49   | 7.323831 | 1 |
| 30 | 1.76936042 | 49   | 5.846439 | 1 |
| 31 | 0.43080789 | 1024 | 6.946976 | 1 |
| 32 | 0.89975482 | 121  | 6.595781 | 1 |
| 33 | 1.76662970 | 256  | 7.539027 | 1 |
| 34 | 1.27295768 | 196  | 7.426549 | 1 |
| 35 | 1.33678889 | 729  | 7.640604 | 1 |
| 36 | 0.90170485 | 0    | 6.536692 | 1 |
| 37 | 0.86512369 | 289  | 8.345218 | 1 |
| 38 | 1.51184714 | 784  | 7.698483 | 1 |
| 39 | 1.72602916 | 576  | 7.576610 | 1 |
| 40 | 2.68314242 | 121  | 7.171657 | 1 |
| 41 | 0.98529428 | 1    | 4.718499 | 1 |
| 42 | 1.36593854 | 196  | 6.794587 | 1 |
| 43 | 0.94503367 | 36   | 6.368187 | 1 |
| 44 | 1.51237619 | 100  | 6.173786 | 1 |
| 45 | 0.69314718 | 36   | 7.549609 | 1 |
| 46 | 1.24478841 | 16   | 6.356108 | 1 |
| 47 | 0.70116490 | 100  | 7.628518 | 1 |
| 48 | 1.51986325 | 484  | 7.592870 | 1 |
| 49 | 0.82096857 | 256  | 7.878534 | 1 |
| 50 | 0.96983153 | 36   | 5.480639 | 1 |
| 51 | 0.82850820 | 144  | 7.067320 | 1 |

|    |             |      |          |   |
|----|-------------|------|----------|---|
| 52 | 0.09430964  | 1024 | 8.199739 | 1 |
| 53 | 0.16254389  | 225  | 5.828946 | 1 |
| 54 | 0.47000363  | 289  | 6.214608 | 1 |
| 55 | 0.62924844  | 1156 | 7.377134 | 1 |
| 56 | 1.39716017  | 81   | 7.512071 | 1 |
| 57 | 2.26544380  | 1369 | 7.560080 | 1 |
| 58 | 2.08454108  | 100  | 7.626570 | 1 |
| 59 | 1.52583885  | 1225 | 7.745868 | 1 |
| 60 | 0.76216006  | 36   | 5.278115 | 1 |
| 61 | 1.48160458  | 361  | 7.824046 | 1 |
| 62 | 1.26282644  | 100  | 7.590852 | 1 |
| 63 | 0.99967557  | 121  | 7.517521 | 1 |
| 64 | 1.83258152  | 225  | 5.768321 | 1 |
| 65 | 2.47930765  | 144  | 6.037871 | 1 |
| 66 | 1.27901530  | 144  | 7.539027 | 1 |
| 67 | 1.93793559  | 196  | 4.276666 | 1 |
| 68 | 1.07045281  | 121  | 4.787492 | 1 |
| 69 | 1.12392259  | 81   | 7.541683 | 1 |
| 70 | 1.32175589  | 576  | 5.480639 | 1 |
| 71 | 1.74499977  | 144  | 7.455298 | 1 |
| 72 | 1.30174363  | 169  | 7.522941 | 1 |
| 73 | 1.64186645  | 841  | 7.617268 | 1 |
| 74 | 2.10702014  | 121  | 6.410175 | 1 |
| 75 | 1.46706760  | 169  | 7.050123 | 1 |
| 76 | 1.60581136  | 361  | 7.699842 | 1 |
| 77 | -1.02973938 | 4    | 5.529429 | 1 |
| 78 | 1.08768618  | 576  | 5.820083 | 1 |
| 79 | 0.00000000  | 81   | 4.499810 | 1 |
| 80 | 0.93820870  | 36   | 7.068172 | 1 |
| 81 | -0.15059038 | 484  | 5.918894 | 1 |
| 82 | 0.00000000  | 900  | 3.401197 | 1 |
| 83 | 1.07367051  | 100  | 7.495542 | 1 |
| 84 | 1.26584840  | 36   | 5.641907 | 1 |
| 85 | 0.48636898  | 841  | 6.579251 | 1 |
| 86 | 2.12025952  | 841  | 7.272398 | 1 |
| 87 | 1.12985253  | 1296 | 7.649693 | 1 |
| 88 | 0.99325180  | 361  | 6.907755 | 1 |
| 89 | 1.65862799  | 64   | 6.858565 | 1 |
| 90 | 0.34741220  | 169  | 7.253470 | 1 |
| 91 | 1.56832421  | 256  | 7.649693 | 1 |
| 92 | 0.51084560  | 121  | 4.787492 | 1 |
| 93 | 0.11484543  | 225  | 8.006368 | 1 |
| 94 | -0.69314718 | 36   | 6.907755 | 1 |

|     |             |     |          |   |
|-----|-------------|-----|----------|---|
| 95  | -0.33645228 | 169 | 5.817111 | 1 |
| 96  | 1.02822554  | 484 | 7.103322 | 1 |
| 97  | 1.58068860  | 576 | 6.895683 | 1 |
| 98  | 0.55589461  | 4   | 7.855932 | 1 |
| 99  | 0.90142071  | 36  | 7.615791 | 1 |
| 100 | 0.88430458  | 4   | 6.023448 | 1 |
| 101 | 0.42820460  | 4   | 6.661855 | 1 |
| 102 | 1.05841506  | 196 | 7.235619 | 1 |
| 103 | 0.87833959  | 81  | 7.279319 | 1 |
| 104 | 1.65490830  | 121 | 7.450080 | 1 |
| 105 | 1.32175589  | 81  | 6.684612 | 1 |
| 106 | 0.32851210  | 36  | 5.886104 | 1 |
| 107 | 1.38629436  | 361 | 7.600902 | 1 |
| 108 | 1.17288458  | 676 | 7.069874 | 1 |
| 109 | 1.22418714  | 361 | 7.629490 | 1 |
| 110 | 0.28765708  | 9   | 6.802395 | 1 |
| 111 | 2.23026180  | 49  | 5.370638 | 1 |
| 112 | 1.50407743  | 784 | 7.600902 | 1 |
| 113 | 1.53115201  | 169 | 6.629363 | 1 |
| 114 | 1.37515759  | 81  | 7.142037 | 1 |
| 115 | 1.76026881  | 225 | 7.632401 | 1 |
| 116 | -0.69314718 | 400 | 7.154615 | 1 |
| 117 | 1.40648913  | 841 | 7.447168 | 1 |
| 118 | 1.79175949  | 81  | 7.600902 | 1 |
| 119 | 1.29929209  | 1   | 2.484907 | 1 |
| 120 | 1.35100389  | 64  | 7.331715 | 1 |
| 121 | 1.01628089  | 361 | 6.329721 | 1 |
| 122 | 1.07534361  | 529 | 7.629490 | 1 |
| 123 | 1.47896469  | 9   | 7.508239 | 1 |
| 124 | 1.68948674  | 169 | 7.426549 | 1 |
| 125 | 2.28859782  | 64  | 7.272398 | 1 |
| 126 | -1.82263112 | 289 | 8.507143 | 1 |
| 127 | -0.96076518 | 16  | 7.069874 | 1 |
| 128 | 1.29099417  | 225 | 7.003065 | 1 |
| 129 | 0.86487114  | 121 | 7.323831 | 1 |
| 130 | 1.54045212  | 49  | 6.802395 | 1 |
| 131 | 0.61621213  | 0   | 6.984716 | 1 |
| 132 | 1.64865863  | 0   | 6.173786 | 1 |
| 133 | 1.19349813  | 100 | 5.662960 | 1 |
| 134 | 2.14397621  | 64  | 7.536364 | 1 |
| 135 | 0.72440356  | 4   | 6.445720 | 1 |
| 136 | 0.94160753  | 16  | 5.455321 | 1 |
| 137 | 0.78275937  | 36  | 7.377759 | 1 |

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| 138 | 1.83258152 | 324  | 6.866933 | 1 |
| 139 | 1.20396280 | 9    | 4.787492 | 1 |
| 140 | 1.49164486 | 484  | 7.613325 | 1 |
| 141 | 1.89213264 | 1089 | 7.500529 | 1 |
| 142 | 2.13089490 | 784  | 8.034955 | 1 |
| 143 | 1.48060405 | 529  | 6.813445 | 1 |
| 144 | 0.89433134 | 729  | 7.517521 | 1 |
| 145 | 0.20253254 | 121  | 6.664409 | 1 |
| 146 | 0.48550782 | 36   | 5.991465 | 1 |
| 147 | 1.09861231 | 121  | 6.907755 | 1 |
| 148 | 1.55326962 | 196  | 7.551712 | 1 |
| 149 | 0.12159797 | 289  | 7.479300 | 1 |
| 150 | 2.00180435 | 289  | 7.303843 | 1 |
| 151 | 1.49503660 | 196  | 6.606650 | 1 |
| 152 | 0.90522981 | 121  | 7.506592 | 1 |
| 153 | 0.63254756 | 49   | 7.150701 | 1 |
| 154 | 1.38629436 | 64   | 6.109248 | 1 |
| 155 | 2.10291386 | 36   | 7.107425 | 1 |
| 156 | 1.95964396 | 64   | 7.346010 | 1 |
| 157 | 0.51084560 | 16   | 5.192957 | 1 |
| 158 | 1.23692393 | 625  | 7.644919 | 1 |
| 159 | 1.44331253 | 576  | 7.580700 | 1 |
| 160 | 1.02165926 | 121  | 7.272398 | 1 |
| 161 | 0.63615346 | 361  | 6.677083 | 1 |
| 162 | 1.61645329 | 81   | 6.900731 | 1 |
| 163 | 0.22314355 | 361  | 5.075174 | 1 |
| 164 | 1.04980707 | 196  | 4.653960 | 1 |
| 165 | 1.41505194 | 484  | 7.090077 | 1 |
| 166 | 0.57537663 | 36   | 6.109248 | 1 |
| 167 | 2.60668159 | 529  | 6.903747 | 1 |
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| 169 | 0.75504160 | 36   | 7.028201 | 1 |
| 170 | 1.09497237 | 121  | 7.517521 | 1 |
| 171 | 0.94211435 | 4    | 7.554859 | 1 |
| 172 | 1.72494280 | 484  | 6.887553 | 1 |
| 173 | 1.03154612 | 100  | 7.748029 | 1 |
| 174 | 0.47436908 | 196  | 6.993015 | 1 |
| 175 | 0.81093019 | 144  | 6.684612 | 1 |
| 176 | 0.70926660 | 81   | 7.114769 | 1 |
| 177 | 1.71054947 | 169  | 7.054450 | 1 |
| 178 | 0.46026888 | 324  | 7.728416 | 1 |
| 179 | 1.33181179 | 64   | 6.269096 | 1 |
| 180 | 1.09861231 | 121  | 6.907755 | 1 |



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| 181 | 2.15799856  | 81  | 6.253829 | 1 |
| 182 | 1.43758130  | 81  | 6.633318 | 1 |
| 183 | 1.54489934  | 196 | 7.560080 | 1 |
| 184 | 1.41059673  | 81  | 7.106606 | 1 |
| 185 | 3.21887589  | 4   | 5.298317 | 1 |
| 186 | 0.96816188  | 144 | 7.816014 | 1 |
| 187 | 1.79175949  | 225 | 7.919356 | 1 |
| 188 | 1.68872952  | 121 | 7.607878 | 1 |
| 189 | -0.40917197 | 49  | 7.211557 | 1 |
| 190 | 0.22314355  | 81  | 4.382027 | 1 |
| 191 | 0.82215583  | 361 | 7.420579 | 1 |
| 192 | 1.24170196  | 121 | 6.253829 | 1 |
| 193 | 1.42712438  | 64  | 5.662960 | 1 |
| 194 | 1.49709749  | 169 | 7.607878 | 1 |
| 195 | 0.55961579  | 16  | 6.684612 | 1 |
| 196 | 1.30002820  | 49  | 7.592870 | 1 |
| 197 | 1.88442981  | 361 | 7.508239 | 1 |
| 198 | 0.95551139  | 196 | 7.313220 | 1 |
| 199 | 1.58208728  | 196 | 7.723562 | 1 |
| 200 | 1.75561404  | 9   | 7.454720 | 1 |
| 201 | 1.51310325  | 81  | 7.580700 | 1 |
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| 203 | 2.36443233  | 49  | 7.182352 | 1 |
| 204 | 0.10535048  | 196 | 7.333023 | 1 |
| 205 | 1.39972878  | 841 | 7.705262 | 1 |
| 206 | 0.98846251  | 361 | 7.197435 | 1 |
| 207 | 1.09064734  | 196 | 6.915723 | 1 |
| 208 | 1.15461445  | 256 | 7.572503 | 1 |
| 209 | 1.26694763  | 100 | 7.600902 | 1 |
| 210 | 2.88519168  | 144 | 5.552960 | 1 |
| 211 | 1.22888005  | 576 | 7.487174 | 1 |
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| 213 | 1.35738027  | 81  | 6.648985 | 1 |
| 214 | 0.83772361  | 196 | 6.802395 | 1 |
| 215 | 0.53696114  | 676 | 7.264030 | 1 |
| 216 | 0.74872380  | 49  | 5.347108 | 1 |
| 217 | 2.29587269  | 16  | 5.476464 | 1 |
| 218 | 1.10780323  | 225 | 7.537963 | 1 |
| 219 | 0.62084526  | 529 | 5.370638 | 1 |
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| 223 | 0.46937841  | 36  | 5.976351 | 1 |

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| 224 | 0.98084170  | 121 | 6.514713 | 1 |
| 225 | 2.06949234  | 289 | 7.323171 | 1 |
| 226 | 1.67518818  | 36  | 6.937314 | 1 |
| 227 | 1.38629436  | 49  | 7.130899 | 1 |
| 228 | 1.79921496  | 4   | 7.054450 | 1 |
| 229 | 1.83258152  | 576 | 4.718499 | 1 |
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| 233 | 1.60231256  | 121 | 7.251345 | 1 |
| 234 | 1.01855850  | 4   | 7.170120 | 1 |
| 235 | 1.29705322  | 361 | 7.402452 | 1 |
| 236 | 1.68519449  | 49  | 7.091742 | 1 |
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| 242 | 1.92414641  | 144 | 6.369901 | 1 |
| 243 | 1.62672758  | 121 | 7.226936 | 1 |
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| 245 | 1.46014869  | 100 | 6.306275 | 1 |
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| 249 | 1.42284322  | 441 | 7.539027 | 1 |
| 250 | 2.10103178  | 81  | 7.138867 | 1 |
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| 254 | 1.16236925  | 16  | 7.569928 | 1 |
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| 257 | 0.39305511  | 36  | 5.598422 | 1 |
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| 259 | 0.00000000  | 1   | 6.907755 | 1 |
| 260 | 0.95712548  | 169 | 7.560080 | 1 |
| 261 | 0.55961579  | 9   | 5.298317 | 1 |
| 262 | 1.56861591  | 100 | 7.313220 | 1 |
| 263 | 1.71018791  | 256 | 6.766192 | 1 |
| 264 | 1.41059673  | 81  | 7.748460 | 1 |
| 265 | 0.22314355  | 361 | 7.600902 | 1 |
| 266 | 0.51084560  | 16  | 4.094345 | 1 |

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| 267 | 1.33239245  | 100  | 7.447168 | 1 |
| 268 | 0.86018586  | 25   | 6.309918 | 1 |
| 269 | 2.32277989  | 49   | 7.580700 | 1 |
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| 271 | 1.97610676  | 1444 | 7.560080 | 1 |
| 272 | 0.89543474  | 256  | 7.839919 | 1 |
| 273 | 0.18123759  | 169  | 5.049856 | 1 |
| 274 | 0.49530584  | 1    | 6.659294 | 1 |
| 275 | 0.57779241  | 49   | 8.045588 | 1 |
| 276 | 1.07881773  | 225  | 7.620705 | 1 |
| 277 | 1.60319853  | 100  | 7.383989 | 1 |
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| 279 | 2.08389401  | 361  | 7.021084 | 1 |
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| 282 | 1.06712162  | 49   | 7.226936 | 1 |
| 283 | 1.11880696  | 225  | 6.887553 | 1 |
| 284 | 1.58854103  | 121  | 7.516433 | 1 |
| 285 | 1.39031124  | 625  | 7.309212 | 1 |
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| 287 | 0.20106153  | 16   | 7.588830 | 1 |
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| 289 | 0.98350066  | 361  | 6.329721 | 1 |
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| 294 | 1.29983735  | 841  | 7.494986 | 1 |
| 295 | 0.84092045  | 441  | 7.592870 | 1 |
| 296 | 1.05848444  | 576  | 7.516977 | 1 |
| 297 | 1.15265846  | 361  | 7.364547 | 1 |
| 298 | 1.29357588  | 961  | 4.564348 | 1 |
| 299 | 1.83258152  | 784  | 7.560080 | 1 |
| 300 | 2.32718015  | 225  | 7.431300 | 1 |
| 301 | 1.16614628  | 729  | 7.370860 | 1 |
| 302 | 2.03499317  | 169  | 5.843544 | 1 |
| 303 | 0.67925107  | 16   | 7.327123 | 1 |
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| 305 | 0.75301856  | 64   | 6.896694 | 1 |
| 306 | 0.84728360  | 16   | 6.396930 | 1 |
| 307 | 0.87112600  | 324  | 7.880804 | 1 |
| 308 | 0.22825047  | 9    | 7.672758 | 1 |
| 309 | 0.08965783  | 121  | 5.768321 | 1 |

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| 310 | 1.32175589  | 64   | 7.377759 | 1 |
| 311 | 1.19610190  | 100  | 7.791110 | 1 |
| 312 | 1.63611877  | 1089 | 7.603399 | 1 |
| 313 | 1.89201200  | 361  | 7.580700 | 1 |
| 314 | 1.51830900  | 1225 | 7.671827 | 1 |
| 315 | 2.47215915  | 441  | 7.095893 | 1 |
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| 317 | 1.47364104  | 324  | 7.138867 | 1 |
| 318 | 1.36947882  | 16   | 4.499810 | 1 |
| 319 | 1.20396280  | 144  | 7.495542 | 1 |
| 320 | 1.19872916  | 256  | 6.350886 | 1 |
| 321 | 1.27020991  | 196  | 7.509335 | 1 |
| 322 | 0.47000363  | 9    | 4.317488 | 1 |
| 323 | 0.79998165  | 1    | 7.206377 | 1 |
| 324 | 1.56594563  | 729  | 7.539027 | 1 |
| 325 | 1.75897801  | 144  | 7.122867 | 1 |
| 326 | 0.85802585  | 36   | 6.742881 | 1 |
| 327 | 0.69314718  | 81   | 5.010635 | 1 |
| 328 | 0.64185387  | 4    | 7.600902 | 1 |
| 329 | 1.63374019  | 36   | 7.576610 | 1 |
| 330 | 1.70374763  | 81   | 7.283448 | 1 |
| 331 | 1.84400403  | 256  | 7.461640 | 1 |
| 332 | 1.96611881  | 484  | 7.244228 | 1 |
| 333 | 0.86499745  | 676  | 7.600902 | 1 |
| 334 | 0.93330520  | 121  | 7.467371 | 1 |
| 335 | 0.77923316  | 121  | 7.003974 | 1 |
| 336 | 0.95551139  | 225  | 7.600902 | 1 |
| 337 | 1.31624734  | 169  | 7.537430 | 1 |
| 338 | 1.47590649  | 36   | 5.075174 | 1 |
| 339 | 1.49139726  | 400  | 7.542213 | 1 |
| 340 | 1.45575047  | 289  | 7.276556 | 1 |
| 341 | 0.51084560  | 64   | 7.313220 | 1 |
| 342 | 1.18043804  | 169  | 6.756932 | 1 |
| 343 | 1.68848944  | 225  | 7.521859 | 1 |
| 344 | 0.79072750  | 196  | 7.425358 | 1 |
| 345 | 1.40179861  | 196  | 5.075174 | 1 |
| 346 | -0.43355602 | 36   | 4.682131 | 1 |
| 347 | 1.68317151  | 576  | 7.460490 | 1 |
| 348 | -1.76667666 | 100  | 7.064759 | 1 |
| 349 | 3.15559506  | 4    | 2.708050 | 1 |
| 350 | 2.25952101  | 81   | 7.643962 | 1 |
| 351 | 1.30692637  | 529  | 7.820038 | 1 |
| 352 | 0.79849768  | 144  | 4.905275 | 1 |

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| 353 | 0.55904418  | 64  | 7.572503 | 1 |
| 354 | 0.14790262  | 256 | 6.536692 | 1 |
| 355 | 1.94449484  | 100 | 6.410175 | 1 |
| 356 | 1.37833786  | 49  | 4.143135 | 1 |
| 357 | 3.06474519  | 361 | 5.036953 | 1 |
| 358 | -0.74191731 | 4   | 6.040255 | 1 |
| 359 | 0.76570040  | 81  | 6.478510 | 1 |
| 360 | 0.61939299  | 196 | 6.514713 | 1 |
| 361 | 1.46545208  | 81  | 7.416378 | 1 |
| 362 | 2.18925953  | 256 | 7.426549 | 1 |
| 363 | 1.02165926  | 49  | 5.192957 | 1 |
| 364 | 0.97700948  | 36  | 7.365813 | 1 |
| 365 | 0.91629076  | 484 | 7.090077 | 1 |
| 366 | 2.90509605  | 81  | 6.109248 | 1 |
| 367 | -0.19967119 | 81  | 6.304449 | 1 |
| 368 | 0.69314718  | 196 | 5.703782 | 1 |
| 369 | 2.73339295  | 289 | 6.882437 | 1 |
| 370 | 1.86833465  | 144 | 7.390799 | 1 |
| 371 | 2.12025952  | 169 | 5.703782 | 1 |
| 372 | 1.51519322  | 64  | 7.532624 | 1 |
| 373 | 0.91460931  | 100 | 7.497207 | 1 |
| 374 | 1.49955606  | 256 | 7.669962 | 1 |
| 375 | 0.80307722  | 1   | 6.984716 | 1 |
| 376 | 0.72803164  | 36  | 7.209340 | 1 |
| 377 | 0.51640999  | 16  | 6.285998 | 1 |
| 378 | 1.22644830  | 64  | 5.863631 | 1 |
| 379 | 0.91629076  | 16  | 5.298317 | 1 |
| 380 | 1.37647128  | 225 | 7.623153 | 1 |
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| 386 | 1.94809341  | 361 | 7.357556 | 1 |
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| 388 | 0.65393847  | 144 | 6.659294 | 1 |
| 389 | 1.92789161  | 144 | 6.173786 | 1 |
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| 391 | 0.69314718  | 196 | 7.600902 | 1 |
| 392 | 1.60468662  | 196 | 7.654443 | 1 |
| 393 | 0.18390365  | 121 | 7.416980 | 1 |
| 394 | 3.11351538  | 49  | 3.871201 | 1 |
| 395 | 1.92682922  | 324 | 7.490529 | 1 |

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| 396 | 1.27012563  | 16   | 7.247081 | 1 |
| 397 | 0.68269271  | 1369 | 7.560080 | 1 |
| 398 | 1.68106997  | 169  | 7.669028 | 1 |
| 399 | 0.55629599  | 196  | 7.450080 | 1 |
| 400 | 1.62822044  | 289  | 8.169903 | 1 |
| 401 | 0.91629076  | 25   | 7.600902 | 1 |
| 402 | 1.34155846  | 4    | 6.684612 | 1 |
| 403 | 0.00000000  | 0    | 8.006368 | 1 |
| 404 | 1.12223125  | 9    | 5.680173 | 1 |
| 405 | 0.54017079  | 441  | 7.534763 | 1 |
| 406 | 1.39150572  | 400  | 7.629490 | 1 |
| 407 | 1.69717395  | 361  | 7.513164 | 1 |
| 408 | 3.21887589  | 16   | 4.787492 | 1 |
| 409 | 0.87116778  | 361  | 7.397562 | 1 |
| 410 | 1.16732955  | 121  | 6.656727 | 1 |
| 411 | 1.21698773  | 196  | 7.592870 | 1 |
| 412 | 0.57537663  | 64   | 5.416100 | 1 |
| 413 | 1.15161574  | 169  | 7.580700 | 1 |
| 414 | 0.99425125  | 576  | 6.095825 | 1 |
| 415 | 0.52632493  | 1    | 5.950643 | 1 |
| 416 | -1.54318213 | 1    | 7.064759 | 1 |
| 417 | 1.91204309  | 9    | 7.192934 | 1 |
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| 419 | 0.91629076  | 441  | 6.173786 | 1 |
| 420 | 1.50093913  | 100  | 7.592870 | 1 |
| 421 | 0.94468379  | 169  | 7.572503 | 1 |
| 422 | 1.24126863  | 81   | 3.912023 | 1 |
| 423 | 1.56498432  | 196  | 6.131226 | 1 |
| 424 | 0.83802646  | 4    | 6.522093 | 1 |
| 425 | 1.66885710  | 441  | 7.803843 | 1 |
| 426 | 1.76942861  | 484  | 7.670429 | 1 |
| 427 | 1.22644830  | 196  | 7.473069 | 1 |
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| 435 | NA          | 81   | NA       | 0 |
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| 438 | NA          | 25   | NA       | 0 |

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| 439 | NA | 25  | NA | 0 |
| 440 | NA | 64  | NA | 0 |
| 441 | NA | 4   | NA | 0 |
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| 449 | NA | 4   | NA | 0 |
| 450 | NA | 144 | NA | 0 |
| 451 | NA | 225 | NA | 0 |
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| 453 | NA | 16  | NA | 0 |
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| 455 | NA | 1   | NA | 0 |
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| 476 | NA | 4   | NA | 0 |
| 477 | NA | 144 | NA | 0 |
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|     |    |     |    |   |
|-----|----|-----|----|---|
| 482 | NA | 0   | NA | 0 |
| 483 | NA | 16  | NA | 0 |
| 484 | NA | 9   | NA | 0 |
| 485 | NA | 4   | NA | 0 |
| 486 | NA | 1   | NA | 0 |
| 487 | NA | 0   | NA | 0 |
| 488 | NA | 1   | NA | 0 |
| 489 | NA | 1   | NA | 0 |
| 490 | NA | 36  | NA | 0 |
| 491 | NA | 144 | NA | 0 |
| 492 | NA | 36  | NA | 0 |
| 493 | NA | 81  | NA | 0 |
| 494 | NA | 196 | NA | 0 |
| 495 | NA | 169 | NA | 0 |
| 496 | NA | 64  | NA | 0 |
| 497 | NA | 0   | NA | 0 |
| 498 | NA | 1   | NA | 0 |
| 499 | NA | 9   | NA | 0 |
| 500 | NA | 169 | NA | 0 |
| 501 | NA | 9   | NA | 0 |
| 502 | NA | 64  | NA | 0 |
| 503 | NA | 64  | NA | 0 |
| 504 | NA | 324 | NA | 0 |
| 505 | NA | 4   | NA | 0 |
| 506 | NA | 9   | NA | 0 |
| 507 | NA | 25  | NA | 0 |
| 508 | NA | 4   | NA | 0 |
| 509 | NA | 100 | NA | 0 |
| 510 | NA | 900 | NA | 0 |
| 511 | NA | 1   | NA | 0 |
| 512 | NA | 25  | NA | 0 |
| 513 | NA | 64  | NA | 0 |
| 514 | NA | 0   | NA | 0 |
| 515 | NA | 16  | NA | 0 |
| 516 | NA | 4   | NA | 0 |
| 517 | NA | 900 | NA | 0 |
| 518 | NA | 625 | NA | 0 |
| 519 | NA | 9   | NA | 0 |
| 520 | NA | 400 | NA | 0 |
| 521 | NA | 400 | NA | 0 |
| 522 | NA | 0   | NA | 0 |
| 523 | NA | 225 | NA | 0 |
| 524 | NA | 100 | NA | 0 |



|     |    |     |    |   |
|-----|----|-----|----|---|
| 525 | NA | 16  | NA | 0 |
| 526 | NA | 9   | NA | 0 |
| 527 | NA | 100 | NA | 0 |
| 528 | NA | 81  | NA | 0 |
| 529 | NA | 49  | NA | 0 |
| 530 | NA | 144 | NA | 0 |
| 531 | NA | 0   | NA | 0 |
| 532 | NA | 256 | NA | 0 |
| 533 | NA | 16  | NA | 0 |
| 534 | NA | 49  | NA | 0 |
| 535 | NA | 49  | NA | 0 |
| 536 | NA | 196 | NA | 0 |
| 537 | NA | 4   | NA | 0 |
| 538 | NA | 400 | NA | 0 |
| 539 | NA | 25  | NA | 0 |
| 540 | NA | 100 | NA | 0 |
| 541 | NA | 400 | NA | 0 |
| 542 | NA | 100 | NA | 0 |
| 543 | NA | 64  | NA | 0 |
| 544 | NA | 121 | NA | 0 |
| 545 | NA | 9   | NA | 0 |
| 546 | NA | 36  | NA | 0 |
| 547 | NA | 16  | NA | 0 |
| 548 | NA | 16  | NA | 0 |
| 549 | NA | 81  | NA | 0 |
| 550 | NA | 100 | NA | 0 |
| 551 | NA | 9   | NA | 0 |
| 552 | NA | 4   | NA | 0 |
| 553 | NA | 4   | NA | 0 |
| 554 | NA | 0   | NA | 0 |
| 555 | NA | 64  | NA | 0 |
| 556 | NA | 36  | NA | 0 |
| 557 | NA | 225 | NA | 0 |
| 558 | NA | 225 | NA | 0 |
| 559 | NA | 81  | NA | 0 |
| 560 | NA | 64  | NA | 0 |
| 561 | NA | 324 | NA | 0 |
| 562 | NA | 9   | NA | 0 |
| 563 | NA | 100 | NA | 0 |
| 564 | NA | 36  | NA | 0 |
| 565 | NA | 400 | NA | 0 |
| 566 | NA | 64  | NA | 0 |
| 567 | NA | 9   | NA | 0 |

|     |    |      |    |   |
|-----|----|------|----|---|
| 568 | NA | 16   | NA | 0 |
| 569 | NA | 169  | NA | 0 |
| 570 | NA | 16   | NA | 0 |
| 571 | NA | 289  | NA | 0 |
| 572 | NA | 16   | NA | 0 |
| 573 | NA | 0    | NA | 0 |
| 574 | NA | 225  | NA | 0 |
| 575 | NA | 121  | NA | 0 |
| 576 | NA | 529  | NA | 0 |
| 577 | NA | 1    | NA | 0 |
| 578 | NA | 25   | NA | 0 |
| 579 | NA | 1    | NA | 0 |
| 580 | NA | 25   | NA | 0 |
| 581 | NA | 9    | NA | 0 |
| 582 | NA | 9    | NA | 0 |
| 583 | NA | 361  | NA | 0 |
| 584 | NA | 400  | NA | 0 |
| 585 | NA | 25   | NA | 0 |
| 586 | NA | 0    | NA | 0 |
| 587 | NA | 9    | NA | 0 |
| 588 | NA | 9    | NA | 0 |
| 589 | NA | 49   | NA | 0 |
| 590 | NA | 49   | NA | 0 |
| 591 | NA | 1    | NA | 0 |
| 592 | NA | 169  | NA | 0 |
| 593 | NA | 0    | NA | 0 |
| 594 | NA | 0    | NA | 0 |
| 595 | NA | 144  | NA | 0 |
| 596 | NA | 0    | NA | 0 |
| 597 | NA | 25   | NA | 0 |
| 598 | NA | 2025 | NA | 0 |
| 599 | NA | 100  | NA | 0 |
| 600 | NA | 4    | NA | 0 |
| 601 | NA | 9    | NA | 0 |
| 602 | NA | 1    | NA | 0 |
| 603 | NA | 25   | NA | 0 |
| 604 | NA | 100  | NA | 0 |
| 605 | NA | 16   | NA | 0 |
| 606 | NA | 49   | NA | 0 |
| 607 | NA | 81   | NA | 0 |
| 608 | NA | 25   | NA | 0 |
| 609 | NA | 16   | NA | 0 |
| 610 | NA | 121  | NA | 0 |

|     |    |      |    |   |
|-----|----|------|----|---|
| 611 | NA | 81   | NA | 0 |
| 612 | NA | 16   | NA | 0 |
| 613 | NA | 4    | NA | 0 |
| 614 | NA | 529  | NA | 0 |
| 615 | NA | 9    | NA | 0 |
| 616 | NA | 225  | NA | 0 |
| 617 | NA | 64   | NA | 0 |
| 618 | NA | 9    | NA | 0 |
| 619 | NA | 625  | NA | 0 |
| 620 | NA | 4    | NA | 0 |
| 621 | NA | 0    | NA | 0 |
| 622 | NA | 361  | NA | 0 |
| 623 | NA | 9    | NA | 0 |
| 624 | NA | 49   | NA | 0 |
| 625 | NA | 1    | NA | 0 |
| 626 | NA | 81   | NA | 0 |
| 627 | NA | 9    | NA | 0 |
| 628 | NA | 64   | NA | 0 |
| 629 | NA | 0    | NA | 0 |
| 630 | NA | 25   | NA | 0 |
| 631 | NA | 400  | NA | 0 |
| 632 | NA | 9    | NA | 0 |
| 633 | NA | 144  | NA | 0 |
| 634 | NA | 25   | NA | 0 |
| 635 | NA | 1    | NA | 0 |
| 636 | NA | 0    | NA | 0 |
| 637 | NA | 49   | NA | 0 |
| 638 | NA | 169  | NA | 0 |
| 639 | NA | 9    | NA | 0 |
| 640 | NA | 0    | NA | 0 |
| 641 | NA | 4    | NA | 0 |
| 642 | NA | 0    | NA | 0 |
| 643 | NA | 4    | NA | 0 |
| 644 | NA | 1    | NA | 0 |
| 645 | NA | 100  | NA | 0 |
| 646 | NA | 100  | NA | 0 |
| 647 | NA | 1    | NA | 0 |
| 648 | NA | 9    | NA | 0 |
| 649 | NA | 1024 | NA | 0 |
| 650 | NA | 0    | NA | 0 |
| 651 | NA | 49   | NA | 0 |
| 652 | NA | 25   | NA | 0 |
| 653 | NA | 4    | NA | 0 |

|     |    |      |    |   |
|-----|----|------|----|---|
| 654 | NA | 25   | NA | 0 |
| 655 | NA | 9    | NA | 0 |
| 656 | NA | 625  | NA | 0 |
| 657 | NA | 0    | NA | 0 |
| 658 | NA | 9    | NA | 0 |
| 659 | NA | 100  | NA | 0 |
| 660 | NA | 100  | NA | 0 |
| 661 | NA | 49   | NA | 0 |
| 662 | NA | 25   | NA | 0 |
| 663 | NA | 225  | NA | 0 |
| 664 | NA | 1    | NA | 0 |
| 665 | NA | 25   | NA | 0 |
| 666 | NA | 81   | NA | 0 |
| 667 | NA | 324  | NA | 0 |
| 668 | NA | 1    | NA | 0 |
| 669 | NA | 0    | NA | 0 |
| 670 | NA | 36   | NA | 0 |
| 671 | NA | 1    | NA | 0 |
| 672 | NA | 4    | NA | 0 |
| 673 | NA | 225  | NA | 0 |
| 674 | NA | 625  | NA | 0 |
| 675 | NA | 1    | NA | 0 |
| 676 | NA | 0    | NA | 0 |
| 677 | NA | 0    | NA | 0 |
| 678 | NA | 0    | NA | 0 |
| 679 | NA | 64   | NA | 0 |
| 680 | NA | 484  | NA | 0 |
| 681 | NA | 25   | NA | 0 |
| 682 | NA | 100  | NA | 0 |
| 683 | NA | 1    | NA | 0 |
| 684 | NA | 1    | NA | 0 |
| 685 | NA | 36   | NA | 0 |
| 686 | NA | 16   | NA | 0 |
| 687 | NA | 36   | NA | 0 |
| 688 | NA | 0    | NA | 0 |
| 689 | NA | 1    | NA | 0 |
| 690 | NA | 9    | NA | 0 |
| 691 | NA | 225  | NA | 0 |
| 692 | NA | 1089 | NA | 0 |
| 693 | NA | 4    | NA | 0 |
| 694 | NA | 1    | NA | 0 |
| 695 | NA | 100  | NA | 0 |
| 696 | NA | 0    | NA | 0 |

|     |    |     |    |   |
|-----|----|-----|----|---|
| 697 | NA | 196 | NA | 0 |
| 698 | NA | 225 | NA | 0 |
| 699 | NA | 225 | NA | 0 |
| 700 | NA | 100 | NA | 0 |
| 701 | NA | 36  | NA | 0 |
| 702 | NA | 324 | NA | 0 |
| 703 | NA | 225 | NA | 0 |
| 704 | NA | 900 | NA | 0 |
| 705 | NA | 225 | NA | 0 |
| 706 | NA | 100 | NA | 0 |
| 707 | NA | 0   | NA | 0 |
| 708 | NA | 0   | NA | 0 |
| 709 | NA | 16  | NA | 0 |
| 710 | NA | 0   | NA | 0 |
| 711 | NA | 9   | NA | 0 |
| 712 | NA | 400 | NA | 0 |
| 713 | NA | 9   | NA | 0 |
| 714 | NA | 1   | NA | 0 |
| 715 | NA | 25  | NA | 0 |
| 716 | NA | 49  | NA | 0 |
| 717 | NA | 36  | NA | 0 |
| 718 | NA | 4   | NA | 0 |
| 719 | NA | 0   | NA | 0 |
| 720 | NA | 100 | NA | 0 |
| 721 | NA | 36  | NA | 0 |
| 722 | NA | 16  | NA | 0 |
| 723 | NA | 64  | NA | 0 |
| 724 | NA | 324 | NA | 0 |
| 725 | NA | 49  | NA | 0 |
| 726 | NA | 225 | NA | 0 |
| 727 | NA | 49  | NA | 0 |
| 728 | NA | 64  | NA | 0 |
| 729 | NA | 64  | NA | 0 |
| 730 | NA | 9   | NA | 0 |
| 731 | NA | 100 | NA | 0 |
| 732 | NA | 81  | NA | 0 |
| 733 | NA | 576 | NA | 0 |
| 734 | NA | 144 | NA | 0 |
| 735 | NA | 4   | NA | 0 |
| 736 | NA | 36  | NA | 0 |
| 737 | NA | 324 | NA | 0 |
| 738 | NA | 289 | NA | 0 |
| 739 | NA | 49  | NA | 0 |

|     |    |     |    |   |
|-----|----|-----|----|---|
| 740 | NA | 36  | NA | 0 |
| 741 | NA | 100 | NA | 0 |
| 742 | NA | 25  | NA | 0 |
| 743 | NA | 49  | NA | 0 |
| 744 | NA | 121 | NA | 0 |
| 745 | NA | 196 | NA | 0 |
| 746 | NA | 25  | NA | 0 |
| 747 | NA | 4   | NA | 0 |
| 748 | NA | 16  | NA | 0 |
| 749 | NA | 25  | NA | 0 |
| 750 | NA | 196 | NA | 0 |
| 751 | NA | 16  | NA | 0 |
| 752 | NA | 225 | NA | 0 |
| 753 | NA | 144 | NA | 0 |

Una vez creadas las variables necesarias, se procede a generar dos subconjuntos de observaciones de forma aleatoria con el nombre **entrenamiento** y **prueba**

```
set.seed(100)
mroz <- mroz %>%
  mutate(sample=sample(c("entrenamiento", "prueba"),
                        nrow(mroz),
                        replace = T)) %>%
  print()
```

|    | inlf | hours | kidslt6 | kidsge6 | age | educ | wage   | repwage | hushrs | husage | huseduc |
|----|------|-------|---------|---------|-----|------|--------|---------|--------|--------|---------|
| 1  | 1    | 1610  | 1       | 0       | 32  | 12   | 3.3540 | 2.65    | 2708   | 34     | 12      |
| 2  | 1    | 1656  | 0       | 2       | 30  | 12   | 1.3889 | 2.65    | 2310   | 30     | 9       |
| 3  | 1    | 1980  | 1       | 3       | 35  | 12   | 4.5455 | 4.04    | 3072   | 40     | 12      |
| 4  | 1    | 456   | 0       | 3       | 34  | 12   | 1.0965 | 3.25    | 1920   | 53     | 10      |
| 5  | 1    | 1568  | 1       | 2       | 31  | 14   | 4.5918 | 3.60    | 2000   | 32     | 12      |
| 6  | 1    | 2032  | 0       | 0       | 54  | 12   | 4.7421 | 4.70    | 1040   | 57     | 11      |
| 7  | 1    | 1440  | 0       | 2       | 37  | 16   | 8.3333 | 5.95    | 2670   | 37     | 12      |
| 8  | 1    | 1020  | 0       | 0       | 54  | 12   | 7.8431 | 9.98    | 4120   | 53     | 8       |
| 9  | 1    | 1458  | 0       | 2       | 48  | 12   | 2.1262 | 0.00    | 1995   | 52     | 4       |
| 10 | 1    | 1600  | 0       | 2       | 39  | 12   | 4.6875 | 4.15    | 2100   | 43     | 12      |
| 11 | 1    | 1969  | 0       | 1       | 33  | 12   | 4.0630 | 4.30    | 2450   | 34     | 12      |
| 12 | 1    | 1960  | 0       | 1       | 42  | 11   | 4.5918 | 4.58    | 2375   | 47     | 14      |
| 13 | 1    | 240   | 1       | 2       | 30  | 12   | 2.0833 | 0.00    | 2830   | 33     | 16      |
| 14 | 1    | 997   | 0       | 2       | 43  | 12   | 2.2668 | 3.50    | 3317   | 46     | 12      |
| 15 | 1    | 1848  | 0       | 1       | 43  | 10   | 3.6797 | 3.38    | 2024   | 45     | 17      |
| 16 | 1    | 1224  | 0       | 3       | 35  | 11   | 1.3472 | 0.00    | 1694   | 38     | 12      |

|    |   |      |   |   |    |    |         |      |      |    |    |
|----|---|------|---|---|----|----|---------|------|------|----|----|
| 17 | 1 | 1400 | 0 | 2 | 43 | 12 | 3.2143  | 4.00 | 2156 | 45 | 12 |
| 18 | 1 | 640  | 0 | 5 | 39 | 12 | 5.1750  | 2.25 | 2250 | 40 | 12 |
| 19 | 1 | 2000 | 0 | 0 | 45 | 12 | 2.0000  | 2.30 | 2024 | 51 | 11 |
| 20 | 1 | 1324 | 0 | 4 | 35 | 12 | 7.5529  | 3.94 | 2123 | 40 | 10 |
| 21 | 1 | 2215 | 0 | 2 | 42 | 16 | 3.5052  | 3.30 | 4160 | 48 | 16 |
| 22 | 1 | 1680 | 0 | 0 | 30 | 12 | 3.5714  | 3.80 | 2000 | 35 | 12 |
| 23 | 1 | 1600 | 0 | 0 | 48 | 13 | 3.2500  | 3.26 | 2420 | 52 | 17 |
| 24 | 1 | 800  | 0 | 0 | 45 | 12 | 3.2500  | 2.20 | 1150 | 53 | 17 |
| 25 | 1 | 1955 | 1 | 1 | 31 | 12 | 2.1545  | 2.30 | 2024 | 31 | 12 |
| 26 | 1 | 660  | 0 | 2 | 43 | 17 | 3.7879  | 0.00 | 1904 | 43 | 17 |
| 27 | 1 | 525  | 0 | 0 | 59 | 12 | 4.0000  | 3.18 | 2448 | 53 | 16 |
| 28 | 1 | 1904 | 0 | 3 | 32 | 12 | 4.7269  | 6.07 | 2000 | 33 | 13 |
| 29 | 1 | 1516 | 1 | 0 | 31 | 17 | 7.2559  | 6.00 | 2390 | 30 | 17 |
| 30 | 1 | 346  | 0 | 0 | 42 | 12 | 5.8671  | 6.39 | 1920 | 47 | 10 |
| 31 | 1 | 1040 | 0 | 0 | 50 | 11 | 1.5385  | 0.00 | 1840 | 53 | 10 |
| 32 | 1 | 732  | 0 | 0 | 59 | 16 | 2.4590  | 2.50 | 3360 | 57 | 17 |
| 33 | 1 | 1880 | 0 | 2 | 36 | 13 | 5.8511  | 5.20 | 2284 | 35 | 13 |
| 34 | 1 | 1680 | 0 | 1 | 51 | 12 | 3.5714  | 3.29 | 1875 | 50 | 8  |
| 35 | 1 | 2081 | 0 | 3 | 45 | 16 | 3.8068  | 4.19 | 2140 | 47 | 17 |
| 36 | 1 | 690  | 0 | 1 | 42 | 11 | 2.4638  | 0.00 | 1896 | 44 | 8  |
| 37 | 1 | 4210 | 0 | 0 | 46 | 12 | 2.3753  | 4.63 | 1040 | 49 | 16 |
| 38 | 1 | 2205 | 0 | 1 | 46 | 10 | 4.5351  | 4.55 | 2200 | 52 | 12 |
| 39 | 1 | 1952 | 0 | 0 | 51 | 14 | 5.6183  | 5.60 | 1952 | 58 | 12 |
| 40 | 1 | 1302 | 0 | 0 | 30 | 17 | 14.6310 | 9.53 | 1560 | 30 | 17 |
| 41 | 1 | 112  | 1 | 2 | 30 | 12 | 2.6786  | 0.00 | 4030 | 33 | 16 |
| 42 | 1 | 893  | 0 | 0 | 57 | 12 | 3.9194  | 3.50 | 2570 | 58 | 12 |
| 43 | 1 | 583  | 1 | 2 | 31 | 16 | 2.5729  | 9.98 | 1530 | 34 | 16 |
| 44 | 1 | 480  | 0 | 2 | 48 | 12 | 4.5375  | 4.65 | 3149 | 48 | 8  |
| 45 | 1 | 1900 | 0 | 3 | 30 | 12 | 2.0000  | 2.23 | 2690 | 32 | 12 |
| 46 | 1 | 576  | 0 | 2 | 34 | 12 | 3.4722  | 3.84 | 3096 | 33 | 12 |
| 47 | 1 | 2056 | 0 | 2 | 48 | 16 | 2.0161  | 0.00 | 2552 | 53 | 16 |
| 48 | 1 | 1984 | 0 | 0 | 45 | 12 | 4.5716  | 4.82 | 2040 | 47 | 11 |
| 49 | 1 | 2640 | 0 | 0 | 51 | 12 | 2.2727  | 0.00 | 2180 | 50 | 13 |
| 50 | 1 | 240  | 0 | 2 | 30 | 12 | 2.6375  | 0.00 | 1864 | 37 | 12 |
| 51 | 1 | 1173 | 0 | 1 | 46 | 12 | 2.2899  | 2.50 | 2068 | 46 | 12 |
| 52 | 1 | 3640 | 0 | 0 | 58 | 12 | 1.0989  | 0.00 | 2010 | 58 | 12 |
| 53 | 1 | 340  | 0 | 8 | 37 | 12 | 1.1765  | 0.00 | 2152 | 40 | 10 |
| 54 | 1 | 500  | 0 | 0 | 52 | 8  | 1.6000  | 0.00 | 1496 | 54 | 11 |
| 55 | 1 | 1599 | 0 | 0 | 52 | 10 | 1.8762  | 2.80 | 2100 | 47 | 4  |
| 56 | 1 | 1830 | 0 | 0 | 31 | 16 | 4.0437  | 4.20 | 1960 | 35 | 14 |
| 57 | 1 | 1920 | 0 | 0 | 55 | 14 | 9.6354  | 8.75 | 1985 | 55 | 15 |
| 58 | 1 | 2052 | 0 | 0 | 34 | 17 | 8.0409  | 8.25 | 2020 | 33 | 17 |
| 59 | 1 | 2312 | 0 | 0 | 55 | 14 | 4.5990  | 5.58 | 2178 | 56 | 16 |

|     |   |      |   |   |    |    |         |      |      |    |    |
|-----|---|------|---|---|----|----|---------|------|------|----|----|
| 60  | 1 | 196  | 0 | 2 | 39 | 12 | 2.1429  | 2.50 | 3684 | 39 | 12 |
| 61  | 1 | 2500 | 0 | 3 | 40 | 14 | 4.4000  | 5.50 | 5010 | 42 | 13 |
| 62  | 1 | 1980 | 0 | 4 | 43 | 12 | 3.5354  | 3.75 | 1880 | 47 | 12 |
| 63  | 1 | 1840 | 0 | 0 | 48 | 8  | 2.7174  | 4.80 | 1904 | 56 | 8  |
| 64  | 1 | 320  | 0 | 0 | 47 | 12 | 6.2500  | 6.25 | 2083 | 47 | 12 |
| 65  | 1 | 419  | 0 | 4 | 41 | 12 | 11.9330 | 6.30 | 2125 | 44 | 12 |
| 66  | 1 | 1880 | 0 | 0 | 36 | 8  | 3.5931  | 3.75 | 1985 | 37 | 12 |
| 67  | 1 | 72   | 0 | 2 | 46 | 17 | 6.9444  | 0.00 | 2640 | 48 | 17 |
| 68  | 1 | 120  | 0 | 0 | 34 | 12 | 2.9167  | 0.00 | 2070 | 51 | 8  |
| 69  | 1 | 1885 | 0 | 3 | 41 | 12 | 3.0769  | 2.90 | 2107 | 48 | 8  |
| 70  | 1 | 240  | 0 | 1 | 51 | 12 | 3.7500  | 0.00 | 2250 | 54 | 10 |
| 71  | 1 | 1729 | 0 | 0 | 33 | 12 | 5.7259  | 4.76 | 2880 | 34 | 16 |
| 72  | 1 | 1850 | 0 | 0 | 52 | 12 | 3.6757  | 3.40 | 1848 | 53 | 12 |
| 73  | 1 | 2033 | 0 | 0 | 58 | 9  | 5.1648  | 4.32 | 1927 | 53 | 7  |
| 74  | 1 | 608  | 2 | 4 | 34 | 10 | 8.2237  | 3.00 | 1304 | 38 | 9  |
| 75  | 1 | 1153 | 0 | 1 | 31 | 12 | 4.3365  | 4.52 | 3000 | 35 | 12 |
| 76  | 1 | 2208 | 0 | 1 | 48 | 12 | 4.9819  | 5.31 | 1892 | 52 | 12 |
| 77  | 1 | 252  | 0 | 2 | 32 | 12 | 0.3571  | 0.00 | 3644 | 32 | 12 |
| 78  | 1 | 337  | 0 | 0 | 49 | 17 | 2.9674  | 0.00 | 1430 | 47 | 17 |
| 79  | 1 | 90   | 2 | 2 | 32 | 15 | 1.0000  | 0.00 | 2350 | 31 | 14 |
| 80  | 1 | 1174 | 0 | 0 | 58 | 12 | 2.5554  | 4.87 | 1948 | 59 | 16 |
| 81  | 1 | 372  | 0 | 0 | 50 | 6  | 0.8602  | 2.25 | 1804 | 42 | 12 |
| 82  | 1 | 30   | 0 | 0 | 60 | 14 | 1.0000  | 0.00 | 2326 | 51 | 12 |
| 83  | 1 | 1800 | 0 | 1 | 50 | 12 | 2.9261  | 0.00 | 1739 | 55 | 11 |
| 84  | 1 | 282  | 0 | 0 | 56 | 14 | 3.5461  | 2.50 | 1176 | 57 | 17 |
| 85  | 1 | 720  | 0 | 0 | 51 | 9  | 1.6264  | 2.20 | 1100 | 55 | 8  |
| 86  | 1 | 1440 | 0 | 1 | 54 | 17 | 8.3333  | 6.00 | 1528 | 58 | 17 |
| 87  | 1 | 2100 | 0 | 0 | 59 | 13 | 3.0952  | 2.95 | 2250 | 52 | 15 |
| 88  | 1 | 1000 | 0 | 2 | 46 | 9  | 2.7000  | 2.35 | 1927 | 47 | 10 |
| 89  | 1 | 952  | 0 | 1 | 46 | 15 | 5.2521  | 0.00 | 2414 | 47 | 16 |
| 90  | 1 | 1413 | 1 | 3 | 39 | 12 | 1.4154  | 2.20 | 768  | 49 | 8  |
| 91  | 1 | 2100 | 0 | 2 | 44 | 12 | 4.7986  | 4.85 | 1984 | 43 | 14 |
| 92  | 1 | 120  | 2 | 0 | 33 | 12 | 1.6667  | 2.37 | 2246 | 36 | 12 |
| 93  | 1 | 3000 | 1 | 2 | 33 | 12 | 1.1217  | 0.00 | 3024 | 30 | 17 |
| 94  | 1 | 1000 | 0 | 2 | 48 | 12 | 0.5000  | 0.00 | 2921 | 52 | 12 |
| 95  | 1 | 336  | 0 | 4 | 31 | 12 | 0.7143  | 0.00 | 2045 | 37 | 17 |
| 96  | 1 | 1216 | 0 | 1 | 45 | 12 | 2.7961  | 2.90 | 1928 | 44 | 12 |
| 97  | 1 | 988  | 0 | 1 | 45 | 12 | 4.8583  | 4.50 | 1920 | 44 | 10 |
| 98  | 1 | 2581 | 0 | 2 | 32 | 13 | 1.7435  | 2.60 | 2280 | 37 | 17 |
| 99  | 1 | 2030 | 0 | 0 | 47 | 12 | 2.4631  | 2.80 | 2300 | 47 | 17 |
| 100 | 1 | 413  | 0 | 2 | 34 | 13 | 2.4213  | 3.00 | 2480 | 35 | 13 |
| 101 | 1 | 782  | 0 | 1 | 37 | 12 | 1.5345  | 2.30 | 1135 | 34 | 10 |
| 102 | 1 | 1388 | 0 | 1 | 36 | 12 | 2.8818  | 1.87 | 1384 | 39 | 12 |



|     |   |      |   |   |    |    |        |      |      |    |    |
|-----|---|------|---|---|----|----|--------|------|------|----|----|
| 103 | 1 | 1450 | 1 | 2 | 47 | 12 | 2.4069 | 3.00 | 1848 | 50 | 14 |
| 104 | 1 | 1720 | 0 | 1 | 48 | 16 | 5.2326 | 4.68 | 2499 | 46 | 17 |
| 105 | 1 | 800  | 0 | 2 | 42 | 12 | 3.7500 | 2.50 | 2390 | 43 | 12 |
| 106 | 1 | 360  | 0 | 3 | 33 | 13 | 1.3889 | 0.00 | 2400 | 44 | 14 |
| 107 | 1 | 2000 | 0 | 0 | 46 | 11 | 4.0000 | 4.61 | 1920 | 53 | 8  |
| 108 | 1 | 1176 | 0 | 3 | 47 | 12 | 3.2313 | 3.35 | 2301 | 48 | 13 |
| 109 | 1 | 2058 | 0 | 1 | 44 | 12 | 3.4014 | 3.80 | 1944 | 43 | 10 |
| 110 | 1 | 900  | 0 | 4 | 36 | 12 | 1.3333 | 2.20 | 2100 | 37 | 17 |
| 111 | 1 | 215  | 2 | 0 | 31 | 17 | 9.3023 | 9.98 | 1920 | 32 | 16 |
| 112 | 1 | 2000 | 0 | 0 | 55 | 14 | 4.5000 | 4.37 | 2880 | 55 | 14 |
| 113 | 1 | 757  | 0 | 1 | 45 | 16 | 4.6235 | 4.50 | 1932 | 48 | 16 |
| 114 | 1 | 1264 | 0 | 0 | 47 | 17 | 3.9557 | 0.00 | 3234 | 48 | 17 |
| 115 | 1 | 2064 | 0 | 3 | 46 | 12 | 5.8140 | 6.00 | 2805 | 47 | 12 |
| 116 | 1 | 1280 | 0 | 0 | 49 | 11 | 0.5000 | 0.00 | 2272 | 52 | 9  |
| 117 | 1 | 1715 | 0 | 0 | 49 | 12 | 4.0816 | 3.75 | 2227 | 52 | 14 |
| 118 | 1 | 2000 | 0 | 2 | 45 | 12 | 6.0000 | 4.95 | 1720 | 49 | 6  |
| 119 | 1 | 12   | 1 | 3 | 38 | 17 | 3.6667 | 0.00 | 2300 | 38 | 13 |
| 120 | 1 | 1528 | 0 | 0 | 47 | 10 | 3.8613 | 2.95 | 3410 | 50 | 12 |
| 121 | 1 | 561  | 0 | 3 | 54 | 13 | 2.7629 | 2.53 | 2304 | 57 | 16 |
| 122 | 1 | 2058 | 0 | 0 | 41 | 11 | 2.9310 | 2.90 | 1984 | 42 | 12 |
| 123 | 1 | 1823 | 0 | 2 | 43 | 12 | 4.3884 | 4.20 | 1890 | 33 | 14 |
| 124 | 1 | 1680 | 1 | 1 | 31 | 16 | 5.4167 | 4.70 | 1970 | 32 | 12 |
| 125 | 1 | 1440 | 0 | 0 | 47 | 17 | 9.8611 | 7.10 | 2400 | 46 | 12 |
| 126 | 1 | 4950 | 0 | 2 | 35 | 12 | 0.1616 | 2.75 | 2504 | 37 | 12 |
| 127 | 1 | 1176 | 0 | 3 | 45 | 16 | 0.3826 | 3.75 | 2398 | 48 | 17 |
| 128 | 1 | 1100 | 1 | 0 | 33 | 12 | 3.6364 | 3.58 | 1960 | 39 | 12 |
| 129 | 1 | 1516 | 0 | 1 | 54 | 16 | 2.3747 | 2.40 | 2550 | 55 | 12 |
| 130 | 1 | 900  | 0 | 4 | 35 | 8  | 4.6667 | 3.95 | 2500 | 41 | 12 |
| 131 | 1 | 1080 | 1 | 2 | 31 | 12 | 1.8519 | 2.25 | 2164 | 37 | 10 |
| 132 | 1 | 480  | 0 | 0 | 55 | 12 | 5.2000 | 0.00 | 2640 | 60 | 12 |
| 133 | 1 | 288  | 0 | 2 | 34 | 12 | 3.2986 | 4.62 | 1936 | 36 | 12 |
| 134 | 1 | 1875 | 0 | 1 | 38 | 13 | 8.5333 | 8.50 | 2136 | 41 | 12 |
| 135 | 1 | 630  | 0 | 1 | 45 | 11 | 2.0635 | 0.00 | 1955 | 51 | 10 |
| 136 | 1 | 234  | 0 | 1 | 47 | 12 | 2.5641 | 2.50 | 1980 | 48 | 10 |
| 137 | 1 | 1600 | 0 | 2 | 39 | 12 | 2.1875 | 0.00 | 2550 | 42 | 11 |
| 138 | 1 | 960  | 1 | 0 | 36 | 14 | 6.2500 | 0.00 | 2058 | 37 | 13 |
| 139 | 1 | 120  | 1 | 2 | 33 | 12 | 3.3333 | 0.00 | 2263 | 32 | 14 |
| 140 | 1 | 2025 | 0 | 0 | 50 | 12 | 4.4444 | 4.80 | 1763 | 54 | 13 |
| 141 | 1 | 1809 | 0 | 0 | 58 | 12 | 6.6335 | 6.45 | 2096 | 59 | 14 |
| 142 | 1 | 3087 | 0 | 0 | 49 | 17 | 8.4224 | 9.98 | 2059 | 47 | 13 |
| 143 | 1 | 910  | 0 | 2 | 41 | 14 | 4.3956 | 0.00 | 1820 | 40 | 17 |
| 144 | 1 | 1840 | 0 | 1 | 51 | 12 | 2.4457 | 2.50 | 2832 | 53 | 8  |
| 145 | 1 | 784  | 0 | 0 | 53 | 9  | 1.2245 | 2.25 | 1990 | 60 | 10 |

|     |   |      |   |   |    |    |         |      |      |    |    |
|-----|---|------|---|---|----|----|---------|------|------|----|----|
| 146 | 1 | 400  | 1 | 2 | 36 | 12 | 1.6250  | 0.00 | 2000 | 40 | 7  |
| 147 | 1 | 1000 | 0 | 2 | 46 | 12 | 3.0000  | 5.50 | 1885 | 46 | 12 |
| 148 | 1 | 1904 | 0 | 2 | 36 | 12 | 4.7269  | 4.20 | 2860 | 37 | 12 |
| 149 | 1 | 1771 | 0 | 1 | 53 | 14 | 1.1293  | 9.98 | 1913 | 48 | 16 |
| 150 | 1 | 1486 | 0 | 3 | 40 | 16 | 7.4024  | 6.25 | 1800 | 54 | 16 |
| 151 | 1 | 740  | 0 | 2 | 42 | 17 | 4.4595  | 1.65 | 2880 | 45 | 16 |
| 152 | 1 | 1820 | 1 | 1 | 33 | 15 | 2.4725  | 0.00 | 1993 | 32 | 16 |
| 153 | 1 | 1275 | 0 | 3 | 43 | 12 | 1.8824  | 3.00 | 2250 | 47 | 14 |
| 154 | 1 | 450  | 1 | 0 | 31 | 16 | 4.0000  | 4.00 | 2286 | 30 | 16 |
| 155 | 1 | 1221 | 0 | 0 | 47 | 17 | 8.1900  | 5.99 | 1880 | 47 | 16 |
| 156 | 1 | 1550 | 0 | 0 | 54 | 17 | 7.0968  | 6.00 | 2350 | 58 | 17 |
| 157 | 1 | 180  | 1 | 3 | 33 | 12 | 1.6667  | 0.00 | 3640 | 33 | 11 |
| 158 | 1 | 2090 | 0 | 0 | 43 | 16 | 3.4450  | 3.85 | 1770 | 47 | 14 |
| 159 | 1 | 1960 | 0 | 1 | 46 | 13 | 4.2347  | 4.20 | 1875 | 49 | 13 |
| 160 | 1 | 1440 | 0 | 3 | 35 | 12 | 2.7778  | 4.10 | 2200 | 38 | 9  |
| 161 | 1 | 794  | 0 | 3 | 37 | 11 | 1.8892  | 3.85 | 2033 | 39 | 12 |
| 162 | 1 | 993  | 0 | 2 | 37 | 16 | 5.0352  | 8.30 | 2739 | 39 | 17 |
| 163 | 1 | 160  | 0 | 3 | 34 | 14 | 1.2500  | 0.00 | 1626 | 38 | 14 |
| 164 | 1 | 105  | 1 | 0 | 43 | 16 | 2.8571  | 0.00 | 2248 | 44 | 17 |
| 165 | 1 | 1200 | 0 | 0 | 46 | 12 | 4.1167  | 4.33 | 2140 | 48 | 12 |
| 166 | 1 | 450  | 0 | 3 | 35 | 9  | 1.7778  | 2.60 | 1985 | 42 | 12 |
| 167 | 1 | 996  | 0 | 0 | 46 | 17 | 13.5540 | 9.98 | 1528 | 59 | 17 |
| 168 | 1 | 1052 | 0 | 0 | 46 | 14 | 4.5627  | 4.90 | 1920 | 48 | 16 |
| 169 | 1 | 1128 | 0 | 2 | 43 | 12 | 2.1277  | 2.40 | 1918 | 46 | 10 |
| 170 | 1 | 1840 | 0 | 0 | 30 | 12 | 2.9891  | 3.75 | 2112 | 30 | 12 |
| 171 | 1 | 1910 | 0 | 2 | 41 | 11 | 2.5654  | 2.57 | 2144 | 46 | 9  |
| 172 | 1 | 980  | 0 | 1 | 54 | 12 | 5.6122  | 5.00 | 1920 | 54 | 15 |
| 173 | 1 | 2317 | 0 | 1 | 31 | 12 | 2.8054  | 3.87 | 2241 | 41 | 9  |
| 174 | 1 | 1089 | 0 | 0 | 44 | 10 | 1.6070  | 0.00 | 880  | 47 | 11 |
| 175 | 1 | 800  | 0 | 1 | 32 | 12 | 2.2500  | 0.00 | 2070 | 31 | 16 |
| 176 | 1 | 1230 | 0 | 0 | 47 | 5  | 2.0325  | 2.82 | 1050 | 53 | 5  |
| 177 | 1 | 1158 | 0 | 1 | 46 | 17 | 5.5320  | 8.10 | 2635 | 57 | 17 |
| 178 | 1 | 2272 | 0 | 0 | 37 | 11 | 1.5845  | 3.71 | 3000 | 47 | 8  |
| 179 | 1 | 528  | 0 | 2 | 51 | 12 | 3.7879  | 0.00 | 2500 | 50 | 11 |
| 180 | 1 | 1000 | 0 | 1 | 49 | 12 | 3.0000  | 0.00 | 1990 | 49 | 12 |
| 181 | 1 | 520  | 0 | 4 | 36 | 14 | 8.6538  | 0.00 | 2390 | 37 | 13 |
| 182 | 1 | 760  | 0 | 1 | 39 | 11 | 4.2105  | 3.95 | 1430 | 44 | 12 |
| 183 | 1 | 1920 | 0 | 2 | 48 | 12 | 4.6875  | 4.30 | 1800 | 50 | 8  |
| 184 | 1 | 1220 | 0 | 2 | 38 | 14 | 4.0984  | 4.84 | 2103 | 43 | 17 |
| 185 | 1 | 200  | 0 | 2 | 40 | 12 | 25.0000 | 3.00 | 1350 | 42 | 12 |
| 186 | 1 | 2480 | 1 | 5 | 39 | 10 | 2.6331  | 4.20 | 2880 | 36 | 17 |
| 187 | 1 | 2750 | 0 | 0 | 37 | 16 | 6.0000  | 9.00 | 2400 | 43 | 17 |
| 188 | 1 | 2014 | 0 | 1 | 49 | 13 | 5.4126  | 4.05 | 1135 | 47 | 12 |

|     |   |      |   |   |    |    |         |      |      |    |    |
|-----|---|------|---|---|----|----|---------|------|------|----|----|
| 189 | 1 | 1355 | 0 | 3 | 33 | 12 | 0.6642  | 1.00 | 2750 | 35 | 17 |
| 190 | 1 | 80   | 0 | 0 | 30 | 12 | 1.2500  | 0.00 | 2085 | 32 | 16 |
| 191 | 1 | 1670 | 0 | 0 | 54 | 12 | 2.2754  | 2.10 | 2600 | 56 | 8  |
| 192 | 1 | 520  | 0 | 4 | 39 | 11 | 3.4615  | 3.05 | 3542 | 40 | 12 |
| 193 | 1 | 288  | 0 | 3 | 43 | 12 | 4.1667  | 3.00 | 1975 | 43 | 12 |
| 194 | 1 | 2014 | 0 | 3 | 31 | 9  | 4.4687  | 4.26 | 2400 | 32 | 12 |
| 195 | 1 | 800  | 0 | 3 | 33 | 13 | 1.7500  | 0.00 | 3000 | 37 | 14 |
| 196 | 1 | 1984 | 0 | 3 | 40 | 12 | 3.6694  | 4.25 | 1960 | 39 | 14 |
| 197 | 1 | 1823 | 0 | 1 | 36 | 12 | 6.5826  | 6.00 | 2000 | 39 | 9  |
| 198 | 1 | 1500 | 0 | 0 | 51 | 12 | 2.6000  | 2.00 | 3000 | 51 | 12 |
| 199 | 1 | 2261 | 0 | 1 | 44 | 13 | 4.8651  | 5.50 | 2400 | 43 | 12 |
| 200 | 1 | 1728 | 0 | 3 | 42 | 16 | 5.7870  | 6.25 | 2450 | 48 | 14 |
| 201 | 1 | 1960 | 0 | 1 | 40 | 12 | 4.5408  | 5.00 | 2423 | 40 | 8  |
| 202 | 1 | 1578 | 1 | 1 | 34 | 16 | 9.5057  | 7.72 | 2000 | 33 | 16 |
| 203 | 1 | 1316 | 0 | 0 | 30 | 17 | 10.6380 | 7.00 | 2526 | 41 | 16 |
| 204 | 1 | 1530 | 0 | 0 | 54 | 12 | 1.1111  | 1.13 | 2695 | 53 | 12 |
| 205 | 1 | 2220 | 0 | 0 | 51 | 12 | 4.0541  | 4.37 | 2048 | 54 | 12 |
| 206 | 1 | 1336 | 0 | 2 | 44 | 9  | 2.6871  | 2.64 | 1920 | 46 | 11 |
| 207 | 1 | 1008 | 0 | 1 | 43 | 12 | 2.9762  | 2.50 | 2338 | 42 | 9  |
| 208 | 1 | 1944 | 0 | 1 | 34 | 12 | 3.1728  | 3.23 | 2945 | 37 | 8  |
| 209 | 1 | 2000 | 0 | 0 | 45 | 13 | 3.5500  | 3.45 | 2047 | 52 | 12 |
| 210 | 1 | 258  | 0 | 0 | 39 | 12 | 17.9070 | 0.00 | 1668 | 47 | 7  |
| 211 | 1 | 1785 | 0 | 0 | 50 | 12 | 3.4174  | 5.75 | 175  | 48 | 10 |
| 212 | 1 | 480  | 0 | 0 | 52 | 12 | 3.3333  | 0.00 | 1798 | 53 | 12 |
| 213 | 1 | 772  | 0 | 2 | 41 | 12 | 3.8860  | 7.50 | 1222 | 45 | 12 |
| 214 | 1 | 900  | 0 | 0 | 59 | 10 | 2.3111  | 2.22 | 1820 | 59 | 7  |
| 215 | 1 | 1428 | 0 | 0 | 52 | 12 | 1.7108  | 2.50 | 1560 | 60 | 8  |
| 216 | 1 | 210  | 0 | 0 | 46 | 16 | 2.1143  | 4.00 | 2210 | 49 | 12 |
| 217 | 1 | 239  | 1 | 5 | 41 | 12 | 9.9331  | 4.50 | 2874 | 48 | 16 |
| 218 | 1 | 1878 | 0 | 2 | 33 | 11 | 3.0277  | 3.50 | 2499 | 35 | 8  |
| 219 | 1 | 215  | 0 | 0 | 45 | 12 | 1.8605  | 2.30 | 3088 | 38 | 12 |
| 220 | 1 | 2340 | 1 | 2 | 36 | 10 | 0.1282  | 0.00 | 2020 | 37 | 8  |
| 221 | 1 | 1960 | 0 | 1 | 48 | 12 | 6.6327  | 6.30 | 1980 | 56 | 10 |
| 222 | 1 | 532  | 0 | 1 | 47 | 12 | 5.6391  | 3.60 | 1968 | 47 | 11 |
| 223 | 1 | 394  | 0 | 0 | 45 | 12 | 1.5990  | 2.50 | 2100 | 45 | 12 |
| 224 | 1 | 675  | 0 | 2 | 37 | 12 | 2.6667  | 3.00 | 2651 | 48 | 17 |
| 225 | 1 | 1515 | 0 | 4 | 46 | 16 | 7.9208  | 6.80 | 1918 | 49 | 14 |
| 226 | 1 | 1030 | 0 | 3 | 43 | 17 | 5.3398  | 5.80 | 2585 | 46 | 16 |
| 227 | 1 | 1250 | 0 | 2 | 42 | 12 | 4.0000  | 4.00 | 2250 | 46 | 17 |
| 228 | 1 | 1158 | 1 | 2 | 34 | 17 | 6.0449  | 5.10 | 2480 | 39 | 17 |
| 229 | 1 | 112  | 0 | 0 | 52 | 12 | 6.2500  | 0.00 | 2924 | 53 | 12 |
| 230 | 1 | 336  | 0 | 3 | 37 | 12 | 2.9762  | 2.20 | 1896 | 52 | 9  |
| 231 | 1 | 1984 | 0 | 1 | 37 | 12 | 4.2339  | 4.78 | 2332 | 40 | 12 |

|     |   |      |   |   |    |    |         |      |      |    |    |
|-----|---|------|---|---|----|----|---------|------|------|----|----|
| 232 | 1 | 716  | 0 | 0 | 52 | 8  | 3.4916  | 2.20 | 3482 | 59 | 7  |
| 233 | 1 | 1410 | 1 | 0 | 30 | 12 | 4.9645  | 1.28 | 2106 | 30 | 14 |
| 234 | 1 | 1300 | 0 | 1 | 31 | 13 | 2.7692  | 0.00 | 1160 | 32 | 12 |
| 235 | 1 | 1640 | 0 | 1 | 38 | 12 | 3.6585  | 3.25 | 2040 | 46 | 12 |
| 236 | 1 | 1202 | 0 | 3 | 43 | 12 | 5.3935  | 0.00 | 2856 | 48 | 16 |
| 237 | 1 | 489  | 0 | 1 | 49 | 8  | 0.6564  | 2.29 | 950  | 51 | 8  |
| 238 | 1 | 2076 | 0 | 0 | 55 | 12 | 4.7688  | 4.68 | 2068 | 58 | 10 |
| 239 | 1 | 526  | 0 | 2 | 38 | 17 | 8.5551  | 4.20 | 1896 | 42 | 17 |
| 240 | 1 | 1721 | 0 | 0 | 52 | 17 | 10.4590 | 9.50 | 2000 | 56 | 16 |
| 241 | 1 | 1327 | 0 | 0 | 48 | 12 | 2.6375  | 2.57 | 288  | 51 | 11 |
| 242 | 1 | 584  | 0 | 2 | 32 | 13 | 6.8493  | 4.32 | 2160 | 33 | 12 |
| 243 | 1 | 1376 | 0 | 1 | 32 | 12 | 5.0872  | 5.00 | 3120 | 33 | 17 |
| 244 | 1 | 1040 | 0 | 2 | 38 | 12 | 0.9615  | 0.00 | 1944 | 41 | 17 |
| 245 | 1 | 548  | 0 | 3 | 46 | 12 | 4.3066  | 3.69 | 2046 | 47 | 12 |
| 246 | 1 | 15   | 0 | 3 | 40 | 12 | 7.0667  | 0.00 | 2005 | 42 | 9  |
| 247 | 1 | 1980 | 0 | 4 | 31 | 9  | 2.5253  | 2.56 | 2070 | 36 | 10 |
| 248 | 1 | 1520 | 0 | 1 | 43 | 10 | 7.8947  | 5.00 | 3000 | 50 | 12 |
| 249 | 1 | 1880 | 0 | 0 | 51 | 12 | 4.1489  | 3.90 | 2640 | 51 | 12 |
| 250 | 1 | 1260 | 1 | 0 | 30 | 16 | 8.1746  | 8.17 | 2450 | 34 | 17 |
| 251 | 1 | 1092 | 0 | 0 | 52 | 13 | 9.5971  | 0.00 | 1000 | 53 | 15 |
| 252 | 1 | 1587 | 1 | 5 | 30 | 8  | 2.0164  | 2.30 | 2080 | 33 | 8  |
| 253 | 1 | 156  | 0 | 0 | 51 | 16 | 7.6218  | 0.00 | 2413 | 51 | 16 |
| 254 | 1 | 1939 | 0 | 2 | 31 | 13 | 3.1975  | 3.43 | 2570 | 31 | 12 |
| 255 | 1 | 1250 | 0 | 4 | 34 | 12 | 1.6000  | 1.36 | 2030 | 52 | 12 |
| 256 | 1 | 610  | 0 | 0 | 49 | 11 | 4.0984  | 4.00 | 4684 | 59 | 17 |
| 257 | 1 | 270  | 1 | 3 | 35 | 13 | 1.4815  | 5.00 | 2802 | 41 | 17 |
| 258 | 1 | 660  | 1 | 0 | 53 | 12 | 3.6364  | 3.15 | 2090 | 59 | 12 |
| 259 | 1 | 1000 | 0 | 3 | 32 | 12 | 1.0000  | 0.00 | 2053 | 46 | 16 |
| 260 | 1 | 1920 | 0 | 3 | 38 | 10 | 2.6042  | 2.93 | 1984 | 42 | 10 |
| 261 | 1 | 200  | 0 | 0 | 54 | 12 | 1.7500  | 0.00 | 2040 | 54 | 16 |
| 262 | 1 | 1500 | 0 | 1 | 47 | 17 | 4.8000  | 3.60 | 2794 | 58 | 8  |
| 263 | 1 | 868  | 0 | 1 | 45 | 15 | 5.5300  | 6.00 | 3290 | 47 | 14 |
| 264 | 1 | 2318 | 0 | 1 | 47 | 16 | 4.0984  | 4.20 | 1911 | 46 | 16 |
| 265 | 1 | 2000 | 0 | 0 | 59 | 10 | 1.2500  | 0.00 | 2000 | 60 | 12 |
| 266 | 1 | 60   | 0 | 1 | 32 | 11 | 1.6667  | 0.00 | 2580 | 31 | 12 |
| 267 | 1 | 1715 | 0 | 1 | 45 | 12 | 3.7901  | 3.38 | 2400 | 49 | 17 |
| 268 | 1 | 550  | 0 | 4 | 40 | 12 | 2.3636  | 2.26 | 1740 | 47 | 12 |
| 269 | 1 | 1960 | 0 | 2 | 47 | 14 | 10.2040 | 0.00 | 2500 | 50 | 12 |
| 270 | 1 | 44   | 1 | 2 | 36 | 16 | 6.8182  | 1.36 | 1840 | 37 | 17 |
| 271 | 1 | 1920 | 0 | 0 | 56 | 14 | 7.2146  | 6.92 | 2036 | 56 | 14 |
| 272 | 1 | 2540 | 0 | 1 | 41 | 8  | 2.4484  | 0.00 | 3536 | 43 | 11 |
| 273 | 1 | 156  | 0 | 3 | 48 | 7  | 1.1987  | 0.00 | 880  | 51 | 11 |
| 274 | 1 | 780  | 1 | 2 | 36 | 12 | 1.6410  | 0.00 | 2007 | 38 | 12 |

|     |   |      |   |   |    |    |         |      |      |    |    |
|-----|---|------|---|---|----|----|---------|------|------|----|----|
| 275 | 1 | 3120 | 0 | 0 | 41 | 12 | 1.7821  | 0.00 | 2632 | 44 | 13 |
| 276 | 1 | 2040 | 0 | 0 | 41 | 14 | 2.9412  | 2.80 | 2600 | 43 | 12 |
| 277 | 1 | 1610 | 0 | 3 | 36 | 12 | 4.9689  | 4.25 | 2156 | 36 | 13 |
| 278 | 1 | 215  | 0 | 3 | 37 | 12 | 1.8605  | 0.00 | 3625 | 41 | 12 |
| 279 | 1 | 1120 | 0 | 0 | 38 | 12 | 8.0357  | 0.00 | 2420 | 42 | 12 |
| 280 | 1 | 846  | 0 | 2 | 43 | 14 | 3.9716  | 4.20 | 2080 | 43 | 9  |
| 281 | 1 | 3225 | 0 | 0 | 54 | 16 | 3.0416  | 0.00 | 3443 | 59 | 17 |
| 282 | 1 | 1376 | 0 | 1 | 38 | 12 | 2.9070  | 3.75 | 2250 | 41 | 12 |
| 283 | 1 | 980  | 1 | 0 | 30 | 12 | 3.0612  | 3.60 | 2535 | 34 | 16 |
| 284 | 1 | 1838 | 0 | 0 | 49 | 12 | 4.8966  | 5.00 | 2352 | 48 | 15 |
| 285 | 1 | 1494 | 0 | 1 | 45 | 13 | 4.0161  | 2.50 | 3036 | 49 | 6  |
| 286 | 1 | 450  | 0 | 0 | 51 | 13 | 5.5556  | 3.50 | 2600 | 57 | 14 |
| 287 | 1 | 1976 | 0 | 0 | 34 | 10 | 1.2227  | 2.45 | 2223 | 39 | 7  |
| 288 | 1 | 2012 | 0 | 2 | 34 | 12 | 2.6839  | 3.61 | 2666 | 34 | 10 |
| 289 | 1 | 561  | 0 | 1 | 41 | 12 | 2.6738  | 3.25 | 2006 | 41 | 17 |
| 290 | 1 | 1715 | 0 | 1 | 49 | 12 | 9.3294  | 7.05 | 1710 | 49 | 17 |
| 291 | 1 | 1912 | 0 | 0 | 32 | 12 | 3.1381  | 3.60 | 1920 | 46 | 14 |
| 292 | 1 | 3686 | 0 | 0 | 32 | 14 | 0.5426  | 0.00 | 1647 | 39 | 14 |
| 293 | 1 | 1080 | 0 | 2 | 32 | 17 | 8.6111  | 4.65 | 3080 | 35 | 15 |
| 294 | 1 | 1799 | 0 | 0 | 47 | 10 | 3.6687  | 3.25 | 1920 | 48 | 10 |
| 295 | 1 | 1984 | 0 | 1 | 39 | 9  | 2.3185  | 2.30 | 2420 | 47 | 4  |
| 296 | 1 | 1839 | 0 | 0 | 49 | 12 | 2.8820  | 3.27 | 2205 | 53 | 15 |
| 297 | 1 | 1579 | 0 | 3 | 37 | 12 | 3.1666  | 0.00 | 3035 | 39 | 14 |
| 298 | 1 | 96   | 0 | 0 | 59 | 16 | 3.6458  | 0.00 | 2185 | 60 | 15 |
| 299 | 1 | 1920 | 0 | 0 | 50 | 12 | 6.2500  | 5.47 | 1880 | 56 | 12 |
| 300 | 1 | 1688 | 0 | 1 | 32 | 17 | 10.2490 | 9.80 | 1863 | 33 | 17 |
| 301 | 1 | 1589 | 0 | 0 | 46 | 12 | 3.2096  | 5.54 | 2456 | 48 | 16 |
| 302 | 1 | 345  | 0 | 2 | 43 | 17 | 7.6522  | 5.00 | 1847 | 46 | 17 |
| 303 | 1 | 1521 | 0 | 3 | 37 | 11 | 1.9724  | 2.30 | 2000 | 42 | 6  |
| 304 | 1 | 1490 | 0 | 2 | 32 | 16 | 4.6980  | 3.90 | 1856 | 35 | 14 |
| 305 | 1 | 989  | 0 | 1 | 39 | 11 | 2.1234  | 2.76 | 1880 | 43 | 14 |
| 306 | 1 | 600  | 0 | 2 | 34 | 13 | 2.3333  | 2.90 | 3020 | 35 | 12 |
| 307 | 1 | 2646 | 0 | 1 | 39 | 11 | 2.3896  | 0.00 | 2646 | 41 | 8  |
| 308 | 1 | 2149 | 0 | 3 | 45 | 8  | 1.2564  | 2.50 | 1640 | 48 | 9  |
| 309 | 1 | 320  | 0 | 0 | 50 | 11 | 1.0938  | 0.00 | 1950 | 54 | 11 |
| 310 | 1 | 1600 | 0 | 1 | 40 | 12 | 3.7500  | 3.30 | 1920 | 39 | 12 |
| 311 | 1 | 2419 | 0 | 1 | 30 | 10 | 3.3072  | 3.90 | 2025 | 34 | 12 |
| 312 | 1 | 2005 | 0 | 0 | 57 | 17 | 5.1352  | 5.25 | 2470 | 56 | 17 |
| 313 | 1 | 1960 | 0 | 1 | 39 | 12 | 6.6327  | 3.60 | 1800 | 43 | 12 |
| 314 | 1 | 2147 | 0 | 0 | 53 | 12 | 4.5645  | 4.90 | 1920 | 56 | 8  |
| 315 | 1 | 1207 | 0 | 1 | 48 | 17 | 11.8480 | 7.15 | 2039 | 53 | 17 |
| 316 | 1 | 2000 | 0 | 1 | 46 | 14 | 3.7500  | 3.75 | 2570 | 48 | 16 |
| 317 | 1 | 1260 | 0 | 0 | 47 | 12 | 4.3651  | 4.35 | 1914 | 54 | 12 |

|     |   |      |   |   |    |    |         |      |      |    |    |
|-----|---|------|---|---|----|----|---------|------|------|----|----|
| 318 | 1 | 90   | 0 | 1 | 43 | 12 | 3.9333  | 4.00 | 1516 | 47 | 10 |
| 319 | 1 | 1800 | 0 | 0 | 47 | 12 | 3.3333  | 3.25 | 2520 | 47 | 16 |
| 320 | 1 | 573  | 0 | 1 | 47 | 12 | 3.3159  | 2.20 | 2327 | 48 | 12 |
| 321 | 1 | 1825 | 0 | 0 | 47 | 12 | 3.5616  | 3.00 | 2188 | 50 | 12 |
| 322 | 1 | 75   | 0 | 0 | 46 | 12 | 1.6000  | 0.00 | 1864 | 48 | 12 |
| 323 | 1 | 1348 | 0 | 4 | 34 | 9  | 2.2255  | 2.30 | 2183 | 33 | 10 |
| 324 | 1 | 1880 | 0 | 0 | 48 | 10 | 4.7872  | 4.25 | 1920 | 55 | 12 |
| 325 | 1 | 1240 | 0 | 1 | 30 | 12 | 5.8065  | 6.90 | 1824 | 31 | 12 |
| 326 | 1 | 848  | 0 | 1 | 51 | 12 | 2.3585  | 2.30 | 2878 | 54 | 12 |
| 327 | 1 | 150  | 0 | 5 | 52 | 12 | 2.0000  | 0.00 | 2390 | 54 | 16 |
| 328 | 1 | 2000 | 0 | 2 | 37 | 12 | 1.9000  | 1.85 | 3120 | 39 | 13 |
| 329 | 1 | 1952 | 0 | 2 | 32 | 12 | 5.1230  | 3.25 | 2040 | 33 | 12 |
| 330 | 1 | 1456 | 0 | 2 | 36 | 17 | 5.4945  | 6.04 | 2151 | 35 | 15 |
| 331 | 1 | 1740 | 0 | 2 | 35 | 12 | 6.3218  | 5.50 | 1976 | 37 | 14 |
| 332 | 1 | 1400 | 0 | 0 | 45 | 17 | 7.1429  | 7.14 | 2286 | 51 | 16 |
| 333 | 1 | 2000 | 0 | 0 | 56 | 12 | 2.3750  | 2.70 | 2032 | 60 | 10 |
| 334 | 1 | 1750 | 0 | 2 | 40 | 10 | 2.5429  | 2.74 | 1680 | 45 | 4  |
| 335 | 1 | 1101 | 1 | 2 | 45 | 12 | 2.1798  | 2.30 | 1560 | 49 | 14 |
| 336 | 1 | 2000 | 0 | 2 | 32 | 12 | 2.6000  | 2.50 | 2895 | 30 | 12 |
| 337 | 1 | 1877 | 0 | 0 | 45 | 12 | 3.7294  | 3.60 | 1820 | 50 | 8  |
| 338 | 1 | 160  | 0 | 2 | 40 | 12 | 4.3750  | 1.85 | 2450 | 44 | 12 |
| 339 | 1 | 1886 | 0 | 1 | 38 | 12 | 4.4433  | 4.00 | 1748 | 42 | 8  |
| 340 | 1 | 1446 | 0 | 4 | 49 | 12 | 4.2877  | 4.40 | 1020 | 45 | 12 |
| 341 | 1 | 1500 | 0 | 1 | 47 | 16 | 1.6667  | 1.50 | 2342 | 49 | 17 |
| 342 | 1 | 860  | 0 | 0 | 52 | 13 | 3.2558  | 5.83 | 2250 | 53 | 12 |
| 343 | 1 | 1848 | 0 | 1 | 34 | 13 | 5.4113  | 6.00 | 2880 | 40 | 16 |
| 344 | 1 | 1678 | 0 | 2 | 44 | 12 | 2.2050  | 2.30 | 2032 | 46 | 12 |
| 345 | 1 | 160  | 0 | 3 | 36 | 16 | 4.0625  | 0.00 | 3120 | 42 | 16 |
| 346 | 1 | 108  | 0 | 0 | 50 | 17 | 0.6482  | 0.00 | 1760 | 57 | 16 |
| 347 | 1 | 1738 | 0 | 0 | 45 | 12 | 5.3826  | 6.18 | 1725 | 47 | 12 |
| 348 | 1 | 1170 | 0 | 2 | 44 | 14 | 0.1709  | 0.00 | 2080 | 46 | 13 |
| 349 | 1 | 15   | 0 | 2 | 57 | 12 | 23.4670 | 0.00 | 2040 | 57 | 10 |
| 350 | 1 | 2088 | 0 | 0 | 35 | 17 | 9.5785  | 9.98 | 2940 | 42 | 17 |
| 351 | 1 | 2490 | 0 | 0 | 46 | 12 | 3.6948  | 3.77 | 2280 | 52 | 12 |
| 352 | 1 | 135  | 2 | 1 | 30 | 14 | 2.2222  | 0.00 | 2164 | 35 | 16 |
| 353 | 1 | 1944 | 0 | 3 | 42 | 12 | 1.7490  | 2.30 | 1999 | 44 | 12 |
| 354 | 1 | 690  | 0 | 1 | 34 | 12 | 1.1594  | 2.25 | 1824 | 36 | 13 |
| 355 | 1 | 608  | 0 | 2 | 45 | 17 | 6.9901  | 3.00 | 2182 | 47 | 16 |
| 356 | 1 | 63   | 1 | 2 | 35 | 16 | 3.9683  | 0.00 | 2385 | 37 | 16 |
| 357 | 1 | 154  | 0 | 0 | 40 | 16 | 21.4290 | 8.13 | 2460 | 44 | 17 |
| 358 | 1 | 420  | 0 | 1 | 32 | 12 | 0.4762  | 2.85 | 2595 | 35 | 16 |
| 359 | 1 | 651  | 0 | 0 | 54 | 9  | 2.1505  | 1.44 | 2400 | 57 | 10 |
| 360 | 1 | 675  | 0 | 3 | 38 | 12 | 1.8578  | 2.20 | 3120 | 42 | 8  |

|     |   |      |   |   |    |    |         |      |      |    |    |
|-----|---|------|---|---|----|----|---------|------|------|----|----|
| 361 | 1 | 1663 | 0 | 3 | 43 | 12 | 4.3295  | 3.60 | 2850 | 42 | 12 |
| 362 | 1 | 1680 | 0 | 0 | 54 | 16 | 8.9286  | 7.00 | 760  | 60 | 12 |
| 363 | 1 | 180  | 0 | 3 | 39 | 14 | 2.7778  | 4.00 | 2500 | 37 | 17 |
| 364 | 1 | 1581 | 0 | 1 | 37 | 12 | 2.6565  | 3.25 | 2630 | 39 | 14 |
| 365 | 1 | 1200 | 0 | 2 | 46 | 12 | 2.5000  | 3.08 | 2597 | 48 | 8  |
| 366 | 1 | 450  | 0 | 0 | 56 | 11 | 18.2670 | 0.00 | 2760 | 60 | 11 |
| 367 | 1 | 547  | 0 | 3 | 41 | 12 | 0.8190  | 2.00 | 2070 | 44 | 8  |
| 368 | 1 | 300  | 0 | 1 | 45 | 16 | 2.0000  | 0.00 | 2256 | 48 | 16 |
| 369 | 1 | 975  | 0 | 1 | 44 | 17 | 15.3850 | 8.50 | 1505 | 47 | 16 |
| 370 | 1 | 1621 | 0 | 1 | 50 | 17 | 6.4775  | 0.00 | 2364 | 52 | 17 |
| 371 | 1 | 300  | 0 | 5 | 37 | 14 | 8.3333  | 3.50 | 2895 | 38 | 14 |
| 372 | 1 | 1868 | 0 | 1 | 44 | 12 | 4.5503  | 4.25 | 2041 | 46 | 12 |
| 373 | 1 | 1803 | 0 | 2 | 32 | 14 | 2.4958  | 1.90 | 2195 | 34 | 17 |
| 374 | 1 | 2143 | 1 | 1 | 34 | 12 | 4.4797  | 4.80 | 1935 | 40 | 12 |
| 375 | 1 | 1080 | 0 | 2 | 32 | 10 | 2.2324  | 2.30 | 1950 | 35 | 10 |
| 376 | 1 | 1352 | 0 | 3 | 37 | 12 | 2.0710  | 1.80 | 2375 | 38 | 14 |
| 377 | 1 | 537  | 0 | 1 | 44 | 13 | 1.6760  | 0.00 | 1920 | 55 | 8  |
| 378 | 1 | 352  | 0 | 2 | 34 | 16 | 3.4091  | 0.00 | 3300 | 33 | 12 |
| 379 | 1 | 200  | 1 | 3 | 33 | 12 | 2.5000  | 8.00 | 3680 | 33 | 16 |
| 380 | 1 | 2045 | 0 | 3 | 43 | 7  | 3.9609  | 4.07 | 1968 | 43 | 12 |
| 381 | 1 | 1253 | 0 | 2 | 35 | 16 | 6.2275  | 3.97 | 2504 | 33 | 10 |
| 382 | 1 | 1960 | 0 | 1 | 43 | 14 | 3.9286  | 3.85 | 2000 | 45 | 14 |
| 383 | 1 | 2000 | 0 | 0 | 34 | 12 | 2.9000  | 2.50 | 1656 | 37 | 12 |
| 384 | 1 | 1960 | 0 | 3 | 36 | 10 | 4.0816  | 4.55 | 1968 | 39 | 7  |
| 385 | 1 | 2000 | 0 | 2 | 41 | 12 | 2.8500  | 4.20 | 2016 | 41 | 12 |
| 386 | 1 | 1568 | 0 | 0 | 41 | 16 | 7.0153  | 6.31 | 2602 | 44 | 17 |
| 387 | 1 | 1225 | 0 | 3 | 35 | 10 | 2.9388  | 2.40 | 1560 | 43 | 9  |
| 388 | 1 | 780  | 1 | 3 | 32 | 12 | 1.9231  | 3.25 | 1827 | 37 | 10 |
| 389 | 1 | 480  | 0 | 0 | 30 | 14 | 6.8750  | 0.00 | 2080 | 34 | 14 |
| 390 | 1 | 1923 | 0 | 0 | 43 | 12 | 3.9002  | 4.74 | 3390 | 47 | 12 |
| 391 | 1 | 2000 | 0 | 0 | 54 | 6  | 2.0000  | 0.00 | 2524 | 57 | 6  |
| 392 | 1 | 2110 | 0 | 2 | 35 | 15 | 4.9763  | 4.37 | 2777 | 34 | 12 |
| 393 | 1 | 1664 | 0 | 0 | 50 | 12 | 1.2019  | 5.00 | 3120 | 54 | 13 |
| 394 | 1 | 48   | 1 | 1 | 34 | 17 | 22.5000 | 0.00 | 2700 | 36 | 17 |
| 395 | 1 | 1791 | 0 | 0 | 52 | 14 | 6.8677  | 6.18 | 1904 | 57 | 12 |
| 396 | 1 | 1404 | 0 | 3 | 35 | 13 | 3.5613  | 5.30 | 2360 | 38 | 14 |
| 397 | 1 | 1920 | 0 | 0 | 55 | 6  | 1.9792  | 2.58 | 1960 | 58 | 8  |
| 398 | 1 | 2141 | 0 | 0 | 35 | 16 | 5.3713  | 6.00 | 2000 | 42 | 16 |
| 399 | 1 | 1720 | 0 | 1 | 49 | 14 | 1.7442  | 0.00 | 2600 | 45 | 16 |
| 400 | 1 | 3533 | 2 | 2 | 38 | 15 | 5.0948  | 8.50 | 2000 | 38 | 9  |
| 401 | 1 | 2000 | 0 | 2 | 42 | 14 | 2.5000  | 0.00 | 2218 | 45 | 14 |
| 402 | 1 | 800  | 0 | 1 | 48 | 8  | 3.8250  | 2.30 | 2000 | 52 | 5  |
| 403 | 1 | 3000 | 0 | 0 | 51 | 14 | 1.0000  | 0.00 | 2595 | 53 | 16 |

|     |   |      |   |   |    |    |         |      |      |    |    |
|-----|---|------|---|---|----|----|---------|------|------|----|----|
| 404 | 1 | 293  | 0 | 2 | 43 | 12 | 3.0717  | 4.00 | 2400 | 47 | 12 |
| 405 | 1 | 1872 | 0 | 1 | 43 | 12 | 1.7163  | 0.00 | 2856 | 48 | 12 |
| 406 | 1 | 2058 | 0 | 1 | 38 | 12 | 4.0209  | 4.00 | 2601 | 38 | 14 |
| 407 | 1 | 1832 | 0 | 1 | 44 | 12 | 5.4585  | 4.95 | 2054 | 48 | 9  |
| 408 | 1 | 120  | 1 | 3 | 36 | 12 | 25.0000 | 9.98 | 2500 | 35 | 12 |
| 409 | 1 | 1632 | 0 | 0 | 38 | 12 | 2.3897  | 2.30 | 1960 | 31 | 12 |
| 410 | 1 | 778  | 0 | 0 | 47 | 8  | 3.2134  | 7.25 | 2058 | 51 | 8  |
| 411 | 1 | 1984 | 0 | 2 | 34 | 12 | 3.3770  | 3.14 | 2410 | 49 | 10 |
| 412 | 1 | 225  | 1 | 2 | 40 | 17 | 1.7778  | 0.00 | 1278 | 38 | 17 |
| 413 | 1 | 1960 | 0 | 1 | 31 | 12 | 3.1633  | 3.18 | 2875 | 35 | 12 |
| 414 | 1 | 444  | 0 | 0 | 46 | 12 | 2.7027  | 0.00 | 2340 | 49 | 12 |
| 415 | 1 | 384  | 0 | 3 | 36 | 14 | 1.6927  | 0.00 | 3060 | 43 | 17 |
| 416 | 1 | 1170 | 1 | 2 | 39 | 13 | 0.2137  | 0.00 | 1920 | 47 | 12 |
| 417 | 1 | 1330 | 0 | 2 | 36 | 17 | 6.7669  | 4.50 | 3390 | 38 | 12 |
| 418 | 1 | 1350 | 0 | 4 | 37 | 8  | 1.7407  | 2.10 | 2400 | 41 | 12 |
| 419 | 1 | 480  | 0 | 4 | 39 | 12 | 2.5000  | 0.00 | 1640 | 40 | 11 |
| 420 | 1 | 1984 | 1 | 3 | 36 | 11 | 4.4859  | 3.26 | 1656 | 38 | 8  |
| 421 | 1 | 1944 | 0 | 2 | 49 | 12 | 2.5720  | 2.70 | 1920 | 53 | 16 |
| 422 | 1 | 50   | 1 | 1 | 45 | 12 | 3.4600  | 5.00 | 1780 | 46 | 10 |
| 423 | 1 | 460  | 2 | 0 | 32 | 17 | 4.7826  | 0.00 | 1850 | 31 | 17 |
| 424 | 1 | 680  | 0 | 5 | 36 | 10 | 2.3118  | 0.00 | 3430 | 43 | 12 |
| 425 | 1 | 2450 | 0 | 1 | 40 | 12 | 5.3061  | 6.50 | 2008 | 40 | 8  |
| 426 | 1 | 2144 | 0 | 2 | 43 | 13 | 5.8675  | 0.00 | 2140 | 43 | 11 |
| 427 | 1 | 1760 | 0 | 1 | 33 | 12 | 3.4091  | 3.21 | 3380 | 34 | 12 |
| 428 | 1 | 490  | 0 | 1 | 30 | 12 | 4.0816  | 2.46 | 2430 | 33 | 11 |
| 429 | 0 | 0    | 0 | 1 | 49 | 12 | NA      | 0.00 | 2550 | 54 | 15 |
| 430 | 0 | 0    | 2 | 0 | 30 | 16 | NA      | 0.00 | 1928 | 34 | 16 |
| 431 | 0 | 0    | 1 | 0 | 30 | 12 | NA      | 0.00 | 1100 | 39 | 17 |
| 432 | 0 | 0    | 0 | 4 | 41 | 12 | NA      | 0.00 | 3193 | 40 | 16 |
| 433 | 0 | 0    | 0 | 1 | 45 | 12 | NA      | 0.00 | 2250 | 46 | 16 |
| 434 | 0 | 0    | 0 | 5 | 43 | 12 | NA      | 0.00 | 2012 | 44 | 13 |
| 435 | 0 | 0    | 0 | 1 | 42 | 13 | NA      | 0.00 | 3856 | 46 | 15 |
| 436 | 0 | 0    | 0 | 0 | 60 | 12 | NA      | 0.00 | 1645 | 58 | 12 |
| 437 | 0 | 0    | 0 | 0 | 57 | 12 | NA      | 0.00 | 1554 | 57 | 12 |
| 438 | 0 | 0    | 0 | 2 | 38 | 10 | NA      | 0.00 | 2352 | 41 | 8  |
| 439 | 0 | 0    | 0 | 0 | 56 | 12 | NA      | 0.00 | 1980 | 58 | 12 |
| 440 | 0 | 0    | 0 | 3 | 32 | 12 | NA      | 0.00 | 2352 | 37 | 7  |
| 441 | 0 | 0    | 0 | 1 | 49 | 7  | NA      | 0.00 | 1784 | 58 | 6  |
| 442 | 0 | 0    | 0 | 0 | 55 | 12 | NA      | 0.00 | 2500 | 58 | 12 |
| 443 | 0 | 0    | 1 | 1 | 36 | 9  | NA      | 0.00 | 2088 | 39 | 14 |
| 444 | 0 | 0    | 0 | 3 | 44 | 12 | NA      | 0.00 | 4640 | 50 | 12 |
| 445 | 0 | 0    | 0 | 1 | 44 | 10 | NA      | 0.00 | 3900 | 60 | 12 |
| 446 | 0 | 0    | 1 | 2 | 35 | 14 | NA      | 0.00 | 1988 | 34 | 17 |



|     |   |   |   |   |    |    |    |      |      |    |    |
|-----|---|---|---|---|----|----|----|------|------|----|----|
| 447 | 0 | 0 | 2 | 3 | 44 | 14 | NA | 0.00 | 1920 | 45 | 10 |
| 448 | 0 | 0 | 0 | 1 | 45 | 12 | NA | 0.00 | 2400 | 45 | 12 |
| 449 | 0 | 0 | 1 | 0 | 34 | 12 | NA | 0.00 | 1867 | 38 | 12 |
| 450 | 0 | 0 | 2 | 0 | 30 | 17 | NA | 0.00 | 3570 | 32 | 17 |
| 451 | 0 | 0 | 0 | 1 | 39 | 8  | NA | 0.00 | 2805 | 44 | 12 |
| 452 | 0 | 0 | 0 | 2 | 36 | 12 | NA | 0.00 | 1110 | 39 | 15 |
| 453 | 0 | 0 | 0 | 2 | 38 | 17 | NA | 0.00 | 2695 | 42 | 16 |
| 454 | 0 | 0 | 0 | 0 | 53 | 12 | NA | 0.00 | 1950 | 54 | 16 |
| 455 | 0 | 0 | 0 | 2 | 36 | 12 | NA | 0.00 | 2128 | 42 | 12 |
| 456 | 0 | 0 | 1 | 1 | 32 | 12 | NA | 0.00 | 3260 | 31 | 12 |
| 457 | 0 | 0 | 0 | 3 | 51 | 9  | NA | 0.00 | 1987 | 51 | 12 |
| 458 | 0 | 0 | 0 | 0 | 38 | 11 | NA | 0.00 | 2185 | 46 | 11 |
| 459 | 0 | 0 | 2 | 0 | 33 | 12 | NA | 0.00 | 2475 | 36 | 12 |
| 460 | 0 | 0 | 0 | 0 | 54 | 12 | NA | 0.00 | 2610 | 53 | 12 |
| 461 | 0 | 0 | 0 | 3 | 38 | 9  | NA | 0.00 | 1920 | 44 | 12 |
| 462 | 0 | 0 | 2 | 2 | 30 | 11 | NA | 0.00 | 2352 | 31 | 14 |
| 463 | 0 | 0 | 2 | 3 | 34 | 12 | NA | 0.00 | 3160 | 30 | 12 |
| 464 | 0 | 0 | 0 | 1 | 34 | 9  | NA | 0.00 | 1040 | 37 | 13 |
| 465 | 0 | 0 | 0 | 2 | 50 | 12 | NA | 0.00 | 3120 | 49 | 12 |
| 466 | 0 | 0 | 2 | 0 | 30 | 17 | NA | 0.00 | 2240 | 30 | 16 |
| 467 | 0 | 0 | 0 | 2 | 38 | 12 | NA | 0.00 | 1980 | 42 | 16 |
| 468 | 0 | 0 | 0 | 0 | 54 | 14 | NA | 0.00 | 1960 | 58 | 14 |
| 469 | 0 | 0 | 1 | 2 | 30 | 12 | NA | 3.00 | 2940 | 31 | 17 |
| 470 | 0 | 0 | 0 | 0 | 55 | 12 | NA | 0.00 | 2467 | 56 | 11 |
| 471 | 0 | 0 | 0 | 1 | 51 | 10 | NA | 0.00 | 2256 | 56 | 12 |
| 472 | 0 | 0 | 0 | 1 | 44 | 12 | NA | 0.00 | 1680 | 46 | 12 |
| 473 | 0 | 0 | 0 | 0 | 53 | 12 | NA | 0.00 | 2250 | 55 | 12 |
| 474 | 0 | 0 | 0 | 2 | 42 | 10 | NA | 0.00 | 2400 | 49 | 9  |
| 475 | 0 | 0 | 0 | 2 | 38 | 12 | NA | 0.00 | 2196 | 42 | 11 |
| 476 | 0 | 0 | 1 | 3 | 38 | 13 | NA | 0.00 | 2400 | 40 | 12 |
| 477 | 0 | 0 | 1 | 4 | 41 | 12 | NA | 0.00 | 3825 | 41 | 11 |
| 478 | 0 | 0 | 0 | 3 | 35 | 8  | NA | 0.00 | 2860 | 44 | 9  |
| 479 | 0 | 0 | 1 | 2 | 33 | 12 | NA | 2.75 | 2750 | 34 | 12 |
| 480 | 0 | 0 | 0 | 0 | 48 | 13 | NA | 0.00 | 2103 | 50 | 16 |
| 481 | 0 | 0 | 0 | 0 | 47 | 12 | NA | 0.00 | 1880 | 51 | 12 |
| 482 | 0 | 0 | 0 | 5 | 34 | 12 | NA | 0.00 | 3185 | 41 | 13 |
| 483 | 0 | 0 | 2 | 1 | 33 | 13 | NA | 0.00 | 2677 | 37 | 17 |
| 484 | 0 | 0 | 3 | 1 | 31 | 13 | NA | 0.00 | 3600 | 36 | 17 |
| 485 | 0 | 0 | 0 | 0 | 58 | 8  | NA | 0.00 | 4334 | 58 | 8  |
| 486 | 0 | 0 | 0 | 0 | 49 | 12 | NA | 0.00 | 2874 | 52 | 8  |
| 487 | 0 | 0 | 0 | 1 | 55 | 8  | NA | 0.00 | 1936 | 56 | 9  |
| 488 | 0 | 0 | 0 | 0 | 44 | 14 | NA | 1.50 | 1964 | 49 | 8  |
| 489 | 0 | 0 | 0 | 0 | 44 | 9  | NA | 0.00 | 1900 | 48 | 8  |

|     |   |   |   |   |    |    |    |      |      |    |    |
|-----|---|---|---|---|----|----|----|------|------|----|----|
| 490 | 0 | 0 | 0 | 3 | 36 | 16 | NA | 0.00 | 2500 | 37 | 17 |
| 491 | 0 | 0 | 0 | 3 | 38 | 12 | NA | 0.00 | 3173 | 46 | 14 |
| 492 | 0 | 0 | 0 | 3 | 37 | 16 | NA | 0.00 | 2916 | 38 | 17 |
| 493 | 0 | 0 | 0 | 0 | 47 | 12 | NA | 0.00 | 2208 | 51 | 12 |
| 494 | 0 | 0 | 0 | 3 | 47 | 12 | NA | 0.00 | 2094 | 47 | 10 |
| 495 | 0 | 0 | 1 | 1 | 32 | 12 | NA | 0.00 | 2250 | 33 | 12 |
| 496 | 0 | 0 | 1 | 2 | 43 | 12 | NA | 0.00 | 2000 | 46 | 12 |
| 497 | 0 | 0 | 1 | 4 | 42 | 11 | NA | 0.00 | 2600 | 48 | 10 |
| 498 | 0 | 0 | 0 | 0 | 56 | 12 | NA | 0.00 | 4368 | 57 | 8  |
| 499 | 0 | 0 | 0 | 5 | 38 | 13 | NA | 2.25 | 3068 | 40 | 16 |
| 500 | 0 | 0 | 0 | 2 | 52 | 12 | NA | 0.00 | 2218 | 51 | 11 |
| 501 | 0 | 0 | 0 | 0 | 50 | 12 | NA | 0.00 | 1848 | 56 | 12 |
| 502 | 0 | 0 | 0 | 0 | 33 | 16 | NA | 0.00 | 2430 | 33 | 17 |
| 503 | 0 | 0 | 0 | 2 | 44 | 16 | NA | 0.00 | 2640 | 44 | 17 |
| 504 | 0 | 0 | 0 | 1 | 41 | 12 | NA | 0.00 | 2108 | 42 | 16 |
| 505 | 0 | 0 | 0 | 1 | 45 | 12 | NA | 0.00 | 1998 | 45 | 12 |
| 506 | 0 | 0 | 0 | 0 | 53 | 14 | NA | 0.00 | 2500 | 55 | 16 |
| 507 | 0 | 0 | 0 | 0 | 53 | 14 | NA | 0.00 | 1665 | 56 | 17 |
| 508 | 0 | 0 | 0 | 1 | 42 | 12 | NA | 0.00 | 2990 | 46 | 12 |
| 509 | 0 | 0 | 2 | 0 | 32 | 13 | NA | 0.00 | 1795 | 35 | 16 |
| 510 | 0 | 0 | 0 | 0 | 56 | 12 | NA | 0.00 | 2500 | 53 | 12 |
| 511 | 0 | 0 | 1 | 3 | 37 | 11 | NA | 0.00 | 2205 | 40 | 11 |
| 512 | 0 | 0 | 1 | 2 | 40 | 12 | NA | 0.00 | 2460 | 42 | 14 |
| 513 | 0 | 0 | 0 | 3 | 54 | 15 | NA | 0.00 | 1880 | 55 | 16 |
| 514 | 0 | 0 | 0 | 0 | 53 | 7  | NA | 0.00 | 3481 | 53 | 9  |
| 515 | 0 | 0 | 0 | 1 | 48 | 12 | NA | 0.00 | 2450 | 51 | 12 |
| 516 | 0 | 0 | 1 | 2 | 36 | 12 | NA | 0.00 | 2062 | 38 | 14 |
| 517 | 0 | 0 | 0 | 0 | 57 | 12 | NA | 0.00 | 2146 | 52 | 14 |
| 518 | 0 | 0 | 0 | 0 | 51 | 12 | NA | 0.00 | 1575 | 49 | 7  |
| 519 | 0 | 0 | 0 | 4 | 33 | 13 | NA | 0.00 | 3096 | 37 | 12 |
| 520 | 0 | 0 | 0 | 0 | 52 | 12 | NA | 0.00 | 3280 | 49 | 11 |
| 521 | 0 | 0 | 0 | 0 | 56 | 10 | NA | 0.00 | 1680 | 60 | 8  |
| 522 | 0 | 0 | 1 | 2 | 36 | 12 | NA | 0.00 | 2625 | 38 | 11 |
| 523 | 0 | 0 | 1 | 0 | 36 | 14 | NA | 0.00 | 1846 | 50 | 16 |
| 524 | 0 | 0 | 0 | 1 | 46 | 12 | NA | 0.00 | 2178 | 47 | 10 |
| 525 | 0 | 0 | 0 | 3 | 31 | 10 | NA | 0.00 | 960  | 33 | 9  |
| 526 | 0 | 0 | 0 | 0 | 52 | 11 | NA | 0.00 | 2210 | 51 | 12 |
| 527 | 0 | 0 | 0 | 2 | 46 | 12 | NA | 0.00 | 2192 | 55 | 12 |
| 528 | 0 | 0 | 2 | 0 | 35 | 12 | NA | 0.00 | 1960 | 44 | 16 |
| 529 | 0 | 0 | 0 | 0 | 59 | 12 | NA | 0.00 | 1920 | 56 | 10 |
| 530 | 0 | 0 | 0 | 1 | 36 | 8  | NA | 0.00 | 2286 | 40 | 12 |
| 531 | 0 | 0 | 1 | 3 | 51 | 7  | NA | 0.00 | 2000 | 52 | 7  |
| 532 | 0 | 0 | 1 | 0 | 31 | 16 | NA | 0.00 | 2256 | 31 | 12 |

|     |   |   |   |   |    |    |    |      |      |    |    |
|-----|---|---|---|---|----|----|----|------|------|----|----|
| 533 | 0 | 0 | 0 | 2 | 31 | 14 | NA | 0.00 | 2370 | 36 | 17 |
| 534 | 0 | 0 | 1 | 1 | 32 | 12 | NA | 0.00 | 1800 | 39 | 13 |
| 535 | 0 | 0 | 1 | 2 | 35 | 16 | NA | 0.00 | 2250 | 38 | 16 |
| 536 | 0 | 0 | 0 | 3 | 40 | 12 | NA | 4.10 | 1080 | 43 | 12 |
| 537 | 0 | 0 | 1 | 2 | 33 | 10 | NA | 0.00 | 2840 | 38 | 12 |
| 538 | 0 | 0 | 0 | 0 | 54 | 7  | NA | 0.00 | 2250 | 52 | 11 |
| 539 | 0 | 0 | 1 | 1 | 36 | 12 | NA | 0.00 | 2746 | 37 | 12 |
| 540 | 0 | 0 | 0 | 1 | 50 | 10 | NA | 0.00 | 2300 | 60 | 8  |
| 541 | 0 | 0 | 0 | 0 | 54 | 8  | NA | 0.00 | 2860 | 49 | 8  |
| 542 | 0 | 0 | 0 | 1 | 48 | 11 | NA | 0.00 | 1765 | 49 | 12 |
| 543 | 0 | 0 | 0 | 4 | 41 | 15 | NA | 0.00 | 2520 | 42 | 16 |
| 544 | 0 | 0 | 0 | 4 | 50 | 12 | NA | 0.00 | 2208 | 53 | 12 |
| 545 | 0 | 0 | 0 | 2 | 46 | 12 | NA | 0.00 | 2119 | 51 | 8  |
| 546 | 0 | 0 | 0 | 1 | 42 | 13 | NA | 0.00 | 2580 | 47 | 17 |
| 547 | 0 | 0 | 1 | 2 | 31 | 9  | NA | 0.00 | 1984 | 34 | 12 |
| 548 | 0 | 0 | 0 | 0 | 53 | 12 | NA | 0.00 | 1880 | 58 | 8  |
| 549 | 0 | 0 | 0 | 1 | 51 | 12 | NA | 0.00 | 2185 | 57 | 12 |
| 550 | 0 | 0 | 0 | 1 | 47 | 12 | NA | 0.00 | 2080 | 57 | 12 |
| 551 | 0 | 0 | 0 | 1 | 50 | 12 | NA | 0.00 | 1920 | 50 | 12 |
| 552 | 0 | 0 | 0 | 1 | 37 | 6  | NA | 0.00 | 3000 | 52 | 5  |
| 553 | 0 | 0 | 2 | 2 | 30 | 12 | NA | 0.00 | 2100 | 31 | 12 |
| 554 | 0 | 0 | 0 | 0 | 49 | 12 | NA | 0.00 | 1690 | 39 | 12 |
| 555 | 0 | 0 | 0 | 2 | 52 | 12 | NA | 0.00 | 2600 | 49 | 16 |
| 556 | 0 | 0 | 0 | 2 | 47 | 12 | NA | 0.00 | 1984 | 49 | 16 |
| 557 | 0 | 0 | 0 | 0 | 49 | 12 | NA | 0.00 | 2064 | 53 | 12 |
| 558 | 0 | 0 | 0 | 4 | 44 | 12 | NA | 0.00 | 2553 | 31 | 16 |
| 559 | 0 | 0 | 0 | 0 | 53 | 8  | NA | 0.00 | 2776 | 59 | 9  |
| 560 | 0 | 0 | 1 | 0 | 30 | 12 | NA | 0.00 | 2315 | 31 | 13 |
| 561 | 0 | 0 | 0 | 2 | 54 | 12 | NA | 0.00 | 1880 | 55 | 12 |
| 562 | 0 | 0 | 1 | 1 | 47 | 7  | NA | 0.00 | 2160 | 51 | 7  |
| 563 | 0 | 0 | 0 | 0 | 56 | 15 | NA | 0.00 | 900  | 56 | 12 |
| 564 | 0 | 0 | 0 | 1 | 49 | 12 | NA | 0.00 | 2467 | 52 | 16 |
| 565 | 0 | 0 | 0 | 0 | 48 | 6  | NA | 0.00 | 1820 | 55 | 12 |
| 566 | 0 | 0 | 0 | 1 | 49 | 12 | NA | 0.00 | 2223 | 53 | 10 |
| 567 | 0 | 0 | 0 | 1 | 56 | 12 | NA | 0.00 | 2142 | 60 | 12 |
| 568 | 0 | 0 | 0 | 0 | 46 | 12 | NA | 0.00 | 1928 | 46 | 11 |
| 569 | 0 | 0 | 0 | 2 | 45 | 12 | NA | 0.00 | 2783 | 49 | 17 |
| 570 | 0 | 0 | 0 | 2 | 32 | 12 | NA | 0.00 | 1960 | 35 | 12 |
| 571 | 0 | 0 | 1 | 1 | 43 | 12 | NA | 2.70 | 1920 | 41 | 12 |
| 572 | 0 | 0 | 1 | 1 | 34 | 12 | NA | 0.00 | 1587 | 39 | 12 |
| 573 | 0 | 0 | 1 | 1 | 30 | 12 | NA | 0.00 | 2496 | 51 | 10 |
| 574 | 0 | 0 | 2 | 0 | 38 | 17 | NA | 4.80 | 2280 | 39 | 12 |
| 575 | 0 | 0 | 1 | 1 | 33 | 16 | NA | 0.00 | 2750 | 36 | 17 |

|     |   |   |   |   |    |    |    |      |      |    |    |
|-----|---|---|---|---|----|----|----|------|------|----|----|
| 576 | 0 | 0 | 0 | 0 | 52 | 12 | NA | 0.00 | 2115 | 55 | 12 |
| 577 | 0 | 0 | 0 | 3 | 43 | 11 | NA | 0.00 | 2590 | 45 | 12 |
| 578 | 0 | 0 | 1 | 1 | 33 | 12 | NA | 0.00 | 2372 | 34 | 12 |
| 579 | 0 | 0 | 0 | 0 | 45 | 10 | NA | 0.00 | 2295 | 48 | 12 |
| 580 | 0 | 0 | 2 | 1 | 36 | 10 | NA | 0.00 | 2096 | 38 | 12 |
| 581 | 0 | 0 | 1 | 1 | 34 | 12 | NA | 0.00 | 3315 | 39 | 17 |
| 582 | 0 | 0 | 0 | 2 | 37 | 14 | NA | 0.00 | 1777 | 50 | 16 |
| 583 | 0 | 0 | 0 | 1 | 46 | 10 | NA | 0.00 | 1880 | 51 | 12 |
| 584 | 0 | 0 | 0 | 0 | 47 | 12 | NA | 0.00 | 2184 | 55 | 10 |
| 585 | 0 | 0 | 2 | 1 | 31 | 16 | NA | 0.00 | 3250 | 32 | 16 |
| 586 | 0 | 0 | 0 | 0 | 57 | 5  | NA | 0.00 | 1520 | 58 | 5  |
| 587 | 0 | 0 | 1 | 1 | 30 | 12 | NA | 0.00 | 3119 | 30 | 13 |
| 588 | 0 | 0 | 0 | 0 | 30 | 12 | NA | 0.00 | 640  | 43 | 17 |
| 589 | 0 | 0 | 0 | 3 | 44 | 12 | NA | 0.00 | 2250 | 45 | 12 |
| 590 | 0 | 0 | 0 | 0 | 53 | 13 | NA | 0.00 | 3000 | 53 | 13 |
| 591 | 0 | 0 | 0 | 0 | 51 | 8  | NA | 0.00 | 2028 | 54 | 8  |
| 592 | 0 | 0 | 1 | 3 | 39 | 12 | NA | 0.00 | 2412 | 36 | 14 |
| 593 | 0 | 0 | 0 | 0 | 52 | 8  | NA | 0.00 | 2452 | 54 | 12 |
| 594 | 0 | 0 | 0 | 4 | 46 | 8  | NA | 0.00 | 2304 | 50 | 12 |
| 595 | 0 | 0 | 0 | 5 | 47 | 12 | NA | 0.00 | 3120 | 49 | 12 |
| 596 | 0 | 0 | 0 | 2 | 52 | 8  | NA | 0.00 | 1670 | 54 | 8  |
| 597 | 0 | 0 | 0 | 2 | 45 | 12 | NA | 0.00 | 2137 | 46 | 15 |
| 598 | 0 | 0 | 0 | 0 | 60 | 11 | NA | 0.00 | 2071 | 52 | 11 |
| 599 | 0 | 0 | 0 | 2 | 41 | 13 | NA | 0.00 | 1960 | 54 | 7  |
| 600 | 0 | 0 | 0 | 3 | 39 | 8  | NA | 0.00 | 2068 | 45 | 12 |
| 601 | 0 | 0 | 0 | 1 | 49 | 12 | NA | 0.00 | 2190 | 51 | 12 |
| 602 | 0 | 0 | 1 | 1 | 32 | 15 | NA | 0.00 | 2295 | 37 | 13 |
| 603 | 0 | 0 | 1 | 3 | 33 | 12 | NA | 0.00 | 2970 | 34 | 13 |
| 604 | 0 | 0 | 0 | 4 | 36 | 10 | NA | 0.00 | 2068 | 37 | 8  |
| 605 | 0 | 0 | 3 | 3 | 37 | 13 | NA | 0.00 | 2419 | 39 | 14 |
| 606 | 0 | 0 | 1 | 2 | 30 | 12 | NA | 0.00 | 2150 | 34 | 11 |
| 607 | 0 | 0 | 1 | 1 | 44 | 11 | NA | 0.00 | 1152 | 37 | 10 |
| 608 | 0 | 0 | 0 | 1 | 48 | 12 | NA | 0.00 | 2640 | 49 | 12 |
| 609 | 0 | 0 | 0 | 4 | 40 | 11 | NA | 0.00 | 2550 | 45 | 11 |
| 610 | 0 | 0 | 0 | 0 | 47 | 13 | NA | 0.00 | 1360 | 49 | 16 |
| 611 | 0 | 0 | 0 | 2 | 36 | 12 | NA | 0.00 | 2420 | 40 | 12 |
| 612 | 0 | 0 | 0 | 2 | 40 | 11 | NA | 0.00 | 2205 | 42 | 14 |
| 613 | 0 | 0 | 0 | 1 | 46 | 12 | NA | 0.00 | 3268 | 46 | 12 |
| 614 | 0 | 0 | 0 | 0 | 52 | 12 | NA | 0.00 | 3672 | 54 | 12 |
| 615 | 0 | 0 | 0 | 1 | 44 | 12 | NA | 0.00 | 1800 | 45 | 12 |
| 616 | 0 | 0 | 0 | 1 | 45 | 10 | NA | 0.00 | 1926 | 46 | 14 |
| 617 | 0 | 0 | 2 | 1 | 30 | 7  | NA | 0.00 | 1920 | 35 | 7  |
| 618 | 0 | 0 | 1 | 3 | 40 | 12 | NA | 0.00 | 2080 | 44 | 12 |

|     |   |   |   |   |    |    |    |      |      |    |    |
|-----|---|---|---|---|----|----|----|------|------|----|----|
| 619 | 0 | 0 | 0 | 1 | 43 | 12 | NA | 0.00 | 2856 | 43 | 12 |
| 620 | 0 | 0 | 0 | 2 | 49 | 12 | NA | 0.00 | 2115 | 53 | 10 |
| 621 | 0 | 0 | 1 | 4 | 46 | 12 | NA | 3.45 | 1880 | 48 | 12 |
| 622 | 0 | 0 | 0 | 0 | 52 | 11 | NA | 0.00 | 2000 | 52 | 12 |
| 623 | 0 | 0 | 1 | 1 | 31 | 12 | NA | 0.00 | 2044 | 33 | 15 |
| 624 | 0 | 0 | 1 | 1 | 42 | 10 | NA | 0.00 | 1677 | 47 | 11 |
| 625 | 0 | 0 | 0 | 3 | 33 | 11 | NA | 0.00 | 2184 | 38 | 8  |
| 626 | 0 | 0 | 0 | 0 | 57 | 16 | NA | 0.00 | 3185 | 57 | 13 |
| 627 | 0 | 0 | 0 | 0 | 49 | 10 | NA | 0.00 | 2680 | 51 | 10 |
| 628 | 0 | 0 | 0 | 1 | 45 | 14 | NA | 0.00 | 3615 | 47 | 14 |
| 629 | 0 | 0 | 0 | 0 | 56 | 11 | NA | 0.00 | 2139 | 56 | 12 |
| 630 | 0 | 0 | 1 | 3 | 41 | 12 | NA | 0.00 | 3080 | 43 | 12 |
| 631 | 0 | 0 | 0 | 0 | 56 | 5  | NA | 0.00 | 1261 | 53 | 6  |
| 632 | 0 | 0 | 0 | 1 | 48 | 10 | NA | 0.00 | 2227 | 48 | 10 |
| 633 | 0 | 0 | 0 | 2 | 52 | 16 | NA | 0.00 | 1920 | 53 | 16 |
| 634 | 0 | 0 | 0 | 0 | 51 | 12 | NA | 0.00 | 2350 | 55 | 12 |
| 635 | 0 | 0 | 0 | 3 | 35 | 11 | NA | 0.00 | 1785 | 39 | 10 |
| 636 | 0 | 0 | 0 | 0 | 45 | 12 | NA | 0.00 | 2598 | 51 | 12 |
| 637 | 0 | 0 | 0 | 0 | 54 | 12 | NA | 0.00 | 2455 | 58 | 17 |
| 638 | 0 | 0 | 0 | 2 | 54 | 12 | NA | 0.00 | 2450 | 54 | 13 |
| 639 | 0 | 0 | 1 | 0 | 31 | 12 | NA | 0.00 | 1218 | 32 | 8  |
| 640 | 0 | 0 | 0 | 3 | 53 | 6  | NA | 0.00 | 2040 | 54 | 4  |
| 641 | 0 | 0 | 2 | 2 | 35 | 14 | NA | 0.00 | 2600 | 34 | 14 |
| 642 | 0 | 0 | 1 | 3 | 36 | 12 | NA | 0.00 | 2450 | 40 | 16 |
| 643 | 0 | 0 | 0 | 0 | 59 | 12 | NA | 0.00 | 2717 | 60 | 12 |
| 644 | 0 | 0 | 0 | 0 | 54 | 16 | NA | 0.00 | 2701 | 54 | 17 |
| 645 | 0 | 0 | 1 | 1 | 37 | 12 | NA | 0.00 | 2600 | 47 | 17 |
| 646 | 0 | 0 | 0 | 0 | 44 | 12 | NA | 0.00 | 3640 | 54 | 10 |
| 647 | 0 | 0 | 1 | 2 | 34 | 17 | NA | 0.00 | 2940 | 40 | 16 |
| 648 | 0 | 0 | 0 | 0 | 49 | 12 | NA | 0.00 | 1880 | 50 | 12 |
| 649 | 0 | 0 | 0 | 0 | 49 | 12 | NA | 0.00 | 3500 | 51 | 12 |
| 650 | 0 | 0 | 0 | 0 | 60 | 9  | NA | 0.00 | 3320 | 60 | 8  |
| 651 | 0 | 0 | 0 | 0 | 51 | 12 | NA | 0.00 | 1605 | 55 | 12 |
| 652 | 0 | 0 | 1 | 1 | 30 | 12 | NA | 0.00 | 2500 | 30 | 14 |
| 653 | 0 | 0 | 0 | 2 | 47 | 12 | NA | 0.00 | 2400 | 49 | 9  |
| 654 | 0 | 0 | 0 | 4 | 36 | 12 | NA | 0.00 | 1634 | 45 | 17 |
| 655 | 0 | 0 | 1 | 3 | 35 | 12 | NA | 0.00 | 2260 | 38 | 12 |
| 656 | 0 | 0 | 0 | 0 | 58 | 12 | NA | 0.00 | 3478 | 53 | 12 |
| 657 | 0 | 0 | 1 | 3 | 41 | 14 | NA | 0.00 | 2550 | 42 | 16 |
| 658 | 0 | 0 | 0 | 1 | 51 | 10 | NA | 0.00 | 840  | 52 | 8  |
| 659 | 0 | 0 | 0 | 0 | 47 | 12 | NA | 0.00 | 1520 | 52 | 12 |
| 660 | 0 | 0 | 1 | 2 | 45 | 9  | NA | 0.00 | 1920 | 35 | 9  |
| 661 | 0 | 0 | 0 | 0 | 60 | 14 | NA | 0.00 | 2703 | 55 | 17 |

|     |   |   |   |   |    |    |    |      |      |    |    |
|-----|---|---|---|---|----|----|----|------|------|----|----|
| 662 | 0 | 0 | 1 | 1 | 30 | 16 | NA | 2.00 | 1896 | 46 | 16 |
| 663 | 0 | 0 | 0 | 0 | 55 | 11 | NA | 0.00 | 1960 | 57 | 13 |
| 664 | 0 | 0 | 1 | 2 | 32 | 12 | NA | 0.00 | 3060 | 50 | 8  |
| 665 | 0 | 0 | 0 | 2 | 36 | 12 | NA | 0.00 | 2805 | 38 | 12 |
| 666 | 0 | 0 | 0 | 0 | 55 | 12 | NA | 0.00 | 1944 | 53 | 7  |
| 667 | 0 | 0 | 0 | 0 | 47 | 12 | NA | 0.00 | 1960 | 47 | 12 |
| 668 | 0 | 0 | 0 | 1 | 47 | 12 | NA | 0.00 | 2112 | 52 | 8  |
| 669 | 0 | 0 | 0 | 1 | 37 | 11 | NA | 0.00 | 2544 | 39 | 12 |
| 670 | 0 | 0 | 0 | 2 | 50 | 12 | NA | 0.00 | 1700 | 53 | 17 |
| 671 | 0 | 0 | 0 | 3 | 30 | 12 | NA | 0.00 | 2550 | 31 | 12 |
| 672 | 0 | 0 | 0 | 1 | 48 | 17 | NA | 0.00 | 2080 | 45 | 17 |
| 673 | 0 | 0 | 0 | 2 | 43 | 10 | NA | 0.00 | 2060 | 49 | 12 |
| 674 | 0 | 0 | 1 | 0 | 48 | 11 | NA | 0.00 | 1955 | 46 | 8  |
| 675 | 0 | 0 | 1 | 2 | 41 | 14 | NA | 0.00 | 2500 | 44 | 17 |
| 676 | 0 | 0 | 0 | 0 | 50 | 12 | NA | 0.00 | 2750 | 52 | 10 |
| 677 | 0 | 0 | 0 | 0 | 58 | 8  | NA | 0.00 | 2040 | 59 | 5  |
| 678 | 0 | 0 | 0 | 5 | 38 | 13 | NA | 0.00 | 3275 | 43 | 15 |
| 679 | 0 | 0 | 0 | 1 | 37 | 12 | NA | 0.00 | 2400 | 39 | 12 |
| 680 | 0 | 0 | 0 | 0 | 50 | 16 | NA | 0.00 | 2024 | 51 | 17 |
| 681 | 0 | 0 | 0 | 4 | 42 | 8  | NA | 0.00 | 1840 | 44 | 6  |
| 682 | 0 | 0 | 1 | 3 | 37 | 9  | NA | 0.00 | 2033 | 37 | 17 |
| 683 | 0 | 0 | 0 | 2 | 41 | 16 | NA | 0.00 | 1946 | 40 | 17 |
| 684 | 0 | 0 | 0 | 2 | 31 | 12 | NA | 0.00 | 3660 | 31 | 12 |
| 685 | 0 | 0 | 0 | 0 | 51 | 12 | NA | 0.00 | 2088 | 55 | 11 |
| 686 | 0 | 0 | 1 | 2 | 36 | 12 | NA | 0.00 | 2048 | 41 | 12 |
| 687 | 0 | 0 | 0 | 0 | 54 | 15 | NA | 0.00 | 1920 | 52 | 15 |
| 688 | 0 | 0 | 0 | 0 | 49 | 12 | NA | 0.00 | 2000 | 54 | 12 |
| 689 | 0 | 0 | 1 | 1 | 48 | 9  | NA | 0.00 | 2204 | 47 | 8  |
| 690 | 0 | 0 | 0 | 2 | 42 | 9  | NA | 0.00 | 3157 | 45 | 10 |
| 691 | 0 | 0 | 1 | 2 | 41 | 12 | NA | 0.00 | 1665 | 44 | 14 |
| 692 | 0 | 0 | 0 | 0 | 55 | 16 | NA | 0.00 | 2304 | 56 | 11 |
| 693 | 0 | 0 | 0 | 0 | 42 | 9  | NA | 0.00 | 2275 | 46 | 8  |
| 694 | 0 | 0 | 0 | 1 | 32 | 15 | NA | 0.00 | 2760 | 33 | 17 |
| 695 | 0 | 0 | 0 | 2 | 43 | 12 | NA | 0.00 | 1750 | 44 | 14 |
| 696 | 0 | 0 | 1 | 3 | 33 | 12 | NA | 0.00 | 3366 | 37 | 13 |
| 697 | 0 | 0 | 0 | 1 | 48 | 15 | NA | 0.00 | 2205 | 51 | 16 |
| 698 | 0 | 0 | 0 | 2 | 43 | 12 | NA | 0.00 | 1990 | 48 | 9  |
| 699 | 0 | 0 | 1 | 3 | 47 | 17 | NA | 0.00 | 1930 | 57 | 16 |
| 700 | 0 | 0 | 0 | 0 | 54 | 12 | NA | 0.00 | 1350 | 60 | 12 |
| 701 | 0 | 0 | 0 | 1 | 51 | 12 | NA | 0.00 | 3340 | 52 | 12 |
| 702 | 0 | 0 | 0 | 1 | 51 | 10 | NA | 0.00 | 960  | 57 | 10 |
| 703 | 0 | 0 | 1 | 1 | 43 | 13 | NA | 0.00 | 2732 | 42 | 13 |
| 704 | 0 | 0 | 0 | 0 | 53 | 12 | NA | 0.00 | 1624 | 59 | 8  |

|     |   |   |   |   |    |    |    |      |      |    |    |
|-----|---|---|---|---|----|----|----|------|------|----|----|
| 705 | 0 | 0 | 1 | 1 | 34 | 11 | NA | 0.00 | 1804 | 36 | 12 |
| 706 | 0 | 0 | 1 | 1 | 31 | 8  | NA | 0.00 | 2805 | 31 | 10 |
| 707 | 0 | 0 | 0 | 0 | 56 | 12 | NA | 0.00 | 2160 | 59 | 8  |
| 708 | 0 | 0 | 0 | 1 | 42 | 16 | NA | 0.00 | 2052 | 55 | 15 |
| 709 | 0 | 0 | 0 | 2 | 32 | 12 | NA | 0.00 | 2250 | 35 | 16 |
| 710 | 0 | 0 | 1 | 3 | 35 | 12 | NA | 0.00 | 1120 | 37 | 12 |
| 711 | 0 | 0 | 1 | 1 | 30 | 12 | NA | 0.00 | 2450 | 36 | 14 |
| 712 | 0 | 0 | 0 | 0 | 51 | 10 | NA | 0.00 | 3432 | 50 | 11 |
| 713 | 0 | 0 | 0 | 3 | 47 | 12 | NA | 0.00 | 2700 | 48 | 12 |
| 714 | 0 | 0 | 0 | 1 | 54 | 12 | NA | 0.00 | 2817 | 55 | 13 |
| 715 | 0 | 0 | 3 | 0 | 31 | 15 | NA | 0.00 | 3000 | 34 | 17 |
| 716 | 0 | 0 | 0 | 0 | 47 | 10 | NA | 0.00 | 2125 | 45 | 11 |
| 717 | 0 | 0 | 0 | 3 | 47 | 14 | NA | 0.00 | 1864 | 42 | 16 |
| 718 | 0 | 0 | 0 | 3 | 40 | 12 | NA | 0.00 | 2400 | 39 | 12 |
| 719 | 0 | 0 | 0 | 0 | 48 | 8  | NA | 0.00 | 2160 | 50 | 7  |
| 720 | 0 | 0 | 0 | 7 | 34 | 8  | NA | 0.00 | 1040 | 51 | 7  |
| 721 | 0 | 0 | 0 | 3 | 38 | 12 | NA | 0.00 | 2450 | 42 | 16 |
| 722 | 0 | 0 | 1 | 3 | 32 | 12 | NA | 0.00 | 2500 | 34 | 16 |
| 723 | 0 | 0 | 0 | 1 | 48 | 16 | NA | 0.00 | 2131 | 45 | 17 |
| 724 | 0 | 0 | 0 | 2 | 41 | 12 | NA | 0.00 | 2165 | 46 | 7  |
| 725 | 0 | 0 | 0 | 2 | 49 | 5  | NA | 0.00 | 2230 | 43 | 3  |
| 726 | 0 | 0 | 0 | 0 | 59 | 8  | NA | 0.00 | 1995 | 55 | 12 |
| 727 | 0 | 0 | 0 | 0 | 58 | 13 | NA | 0.00 | 2025 | 57 | 16 |
| 728 | 0 | 0 | 0 | 3 | 41 | 12 | NA | 0.00 | 2450 | 48 | 15 |
| 729 | 0 | 0 | 0 | 2 | 45 | 12 | NA | 0.00 | 2160 | 45 | 12 |
| 730 | 0 | 0 | 1 | 1 | 30 | 14 | NA | 0.00 | 1715 | 32 | 17 |
| 731 | 0 | 0 | 0 | 1 | 41 | 12 | NA | 0.00 | 3018 | 42 | 16 |
| 732 | 0 | 0 | 2 | 0 | 30 | 12 | NA | 0.00 | 2216 | 33 | 16 |
| 733 | 0 | 0 | 0 | 1 | 53 | 12 | NA | 0.00 | 2499 | 54 | 12 |
| 734 | 0 | 0 | 0 | 0 | 31 | 12 | NA | 0.00 | 2250 | 37 | 14 |
| 735 | 0 | 0 | 0 | 2 | 43 | 14 | NA | 0.00 | 2116 | 44 | 17 |
| 736 | 0 | 0 | 1 | 1 | 31 | 12 | NA | 0.00 | 2016 | 30 | 14 |
| 737 | 0 | 0 | 0 | 0 | 51 | 12 | NA | 0.00 | 2470 | 60 | 10 |
| 738 | 0 | 0 | 0 | 0 | 43 | 9  | NA | 0.00 | 1640 | 45 | 12 |
| 739 | 0 | 0 | 1 | 2 | 31 | 14 | NA | 0.00 | 2016 | 34 | 16 |
| 740 | 0 | 0 | 0 | 0 | 48 | 11 | NA | 0.00 | 2185 | 48 | 12 |
| 741 | 0 | 0 | 1 | 1 | 31 | 12 | NA | 0.00 | 800  | 33 | 14 |
| 742 | 0 | 0 | 0 | 1 | 44 | 12 | NA | 0.00 | 3022 | 46 | 12 |
| 743 | 0 | 0 | 0 | 1 | 48 | 11 | NA | 0.00 | 1512 | 50 | 14 |
| 744 | 0 | 0 | 0 | 1 | 53 | 12 | NA | 0.00 | 2677 | 53 | 12 |
| 745 | 0 | 0 | 0 | 3 | 42 | 10 | NA | 2.75 | 3150 | 44 | 12 |
| 746 | 0 | 0 | 2 | 6 | 39 | 12 | NA | 0.00 | 1430 | 34 | 12 |
| 747 | 0 | 0 | 1 | 2 | 32 | 10 | NA | 0.00 | 3307 | 36 | 4  |

|     |         |        |        |          |          |      |      |       |             |    |    |
|-----|---------|--------|--------|----------|----------|------|------|-------|-------------|----|----|
| 748 | 0       | 0      | 0      | 2        | 36       | 12   | NA   | 0.00  | 3120        | 39 | 12 |
| 749 | 0       | 0      | 0      | 2        | 40       | 13   | NA   | 0.00  | 3020        | 43 | 16 |
| 750 | 0       | 0      | 2      | 3        | 31       | 12   | NA   | 0.00  | 2056        | 33 | 12 |
| 751 | 0       | 0      | 0      | 0        | 43       | 12   | NA   | 0.00  | 2383        | 43 | 12 |
| 752 | 0       | 0      | 0      | 0        | 60       | 12   | NA   | 0.00  | 1705        | 55 | 8  |
| 753 | 0       | 0      | 0      | 3        | 39       | 9    | NA   | 0.00  | 3120        | 48 | 12 |
|     | huswage | faminc | mtr    | motheduc | fatheduc | unem | city | exper | nwifeinc    |    |    |
| 1   | 4.0288  | 16310  | 0.7215 | 12       | 7        | 5.0  | 0    | 14    | 10.91005993 |    |    |
| 2   | 8.4416  | 21800  | 0.6615 | 7        | 7        | 11.0 | 1    | 5     | 19.49998093 |    |    |
| 3   | 3.5807  | 21040  | 0.6915 | 12       | 7        | 5.0  | 0    | 15    | 12.03991032 |    |    |
| 4   | 3.5417  | 7300   | 0.7815 | 7        | 7        | 5.0  | 0    | 6     | 6.79999590  |    |    |
| 5   | 10.0000 | 27300  | 0.6215 | 12       | 14       | 9.5  | 1    | 7     | 20.10005760 |    |    |
| 6   | 6.7106  | 19495  | 0.6915 | 14       | 7        | 7.5  | 1    | 33    | 9.85905361  |    |    |
| 7   | 3.4277  | 21152  | 0.6915 | 14       | 7        | 5.0  | 0    | 11    | 9.15204811  |    |    |
| 8   | 2.5485  | 18900  | 0.6915 | 3        | 3        | 5.0  | 0    | 35    | 10.90003777 |    |    |
| 9   | 4.2206  | 20405  | 0.7515 | 7        | 7        | 3.0  | 0    | 24    | 17.30500031 |    |    |
| 10  | 5.7143  | 20425  | 0.6915 | 7        | 7        | 5.0  | 0    | 21    | 12.92500019 |    |    |
| 11  | 9.7959  | 32300  | 0.5815 | 12       | 3        | 5.0  | 0    | 15    | 24.29995346 |    |    |
| 12  | 8.0000  | 28700  | 0.6215 | 14       | 7        | 5.0  | 0    | 14    | 19.70007133 |    |    |
| 13  | 5.3004  | 15500  | 0.7215 | 16       | 16       | 5.0  | 0    | 0     | 15.00000763 |    |    |
| 14  | 4.3413  | 16860  | 0.7215 | 10       | 10       | 7.5  | 1    | 14    | 14.60000038 |    |    |
| 15  | 10.8700 | 31431  | 0.5815 | 7        | 7        | 7.5  | 1    | 6     | 24.63091469 |    |    |
| 16  | 9.1499  | 19180  | 0.7215 | 16       | 10       | 7.5  | 1    | 9     | 17.53102684 |    |    |
| 17  | 6.1224  | 18600  | 0.6915 | 10       | 7        | 7.5  | 1    | 20    | 14.09998035 |    |    |
| 18  | 6.1498  | 19151  | 0.7215 | 12       | 12       | 7.5  | 1    | 6     | 15.83899975 |    |    |
| 19  | 6.9170  | 18100  | 0.6915 | 7        | 7        | 5.0  | 1    | 23    | 14.10000038 |    |    |
| 20  | 4.7103  | 20300  | 0.6915 | 12       | 7        | 5.0  | 0    | 9     | 10.29996109 |    |    |
| 21  | 3.1310  | 30419  | 0.6215 | 10       | 16       | 7.5  | 0    | 5     | 22.65498161 |    |    |
| 22  | 4.0000  | 14090  | 0.7215 | 12       | 10       | 3.0  | 0    | 11    | 8.09004784  |    |    |
| 23  | 7.2227  | 22679  | 0.6615 | 7        | 3        | 5.0  | 1    | 18    | 17.47900009 |    |    |
| 24  | 7.9652  | 12160  | 0.7215 | 7        | 7        | 11.0 | 0    | 15    | 9.56000042  |    |    |
| 25  | 4.0884  | 12487  | 0.7515 | 12       | 7        | 5.0  | 1    | 4     | 8.27495289  |    |    |
| 26  | 14.1810 | 29850  | 0.5815 | 16       | 14       | 9.5  | 1    | 21    | 27.34998512 |    |    |
| 27  | 6.5359  | 18100  | 0.6915 | 3        | 7        | 9.5  | 1    | 31    | 16.00000000 |    |    |
| 28  | 8.5000  | 26000  | 0.6615 | 3        | 7        | 11.0 | 1    | 9     | 16.99998283 |    |    |
| 29  | 6.2762  | 26100  | 0.6215 | 12       | 12       | 5.0  | 0    | 7     | 15.10005569 |    |    |
| 30  | 5.2083  | 17730  | 0.7215 | 12       | 12       | 9.5  | 0    | 7     | 15.69998360 |    |    |
| 31  | 2.7821  | 6719   | 0.7515 | 7        | 7        | 7.5  | 1    | 32    | 5.11895990  |    |    |
| 32  | 4.9107  | 18550  | 0.6915 | 3        | 3        | 14.0 | 1    | 11    | 16.75001144 |    |    |
| 33  | 5.8669  | 24600  | 0.6615 | 12       | 10       | 7.5  | 0    | 16    | 13.59993172 |    |    |
| 34  | 7.5200  | 23100  | 0.6915 | 7        | 14       | 5.0  | 1    | 14    | 17.10004807 |    |    |
| 35  | 7.5449  | 24656  | 0.6615 | 12       | 12       | 5.0  | 1    | 27    | 16.73404884 |    |    |
| 36  | 5.5380  | 15897  | 0.7515 | 10       | 3        | 7.5  | 0    | 0     | 14.19697762 |    |    |



|    |         |       |        |    |    |      |   |    |             |
|----|---------|-------|--------|----|----|------|---|----|-------------|
| 37 | 6.9231  | 20320 | 0.6915 | 3  | 3  | 11.0 | 1 | 17 | 10.31998730 |
| 38 | 5.0000  | 21384 | 0.6615 | 10 | 3  | 11.0 | 0 | 28 | 11.38410473 |
| 39 | 7.3064  | 25561 | 0.6215 | 7  | 7  | 14.0 | 0 | 24 | 14.59407806 |
| 40 | 11.2180 | 36550 | 0.5800 | 14 | 17 | 5.0  | 1 | 11 | 17.50043869 |
| 41 | 3.8462  | 15810 | 0.7215 | 12 | 12 | 3.0  | 0 | 1  | 15.50999641 |
| 42 | 5.8366  | 25500 | 0.6215 | 9  | 9  | 7.5  | 1 | 14 | 21.99997520 |
| 43 | 13.7250 | 24000 | 0.6615 | 14 | 16 | 9.5  | 1 | 6  | 22.50000000 |
| 44 | 6.3493  | 22172 | 0.6615 | 3  | 3  | 5.0  | 0 | 10 | 19.99399948 |
| 45 | 5.2528  | 17930 | 0.7215 | 12 | 7  | 5.0  | 0 | 6  | 14.13000011 |
| 46 | 1.3075  | 7000  | 0.7815 | 12 | 7  | 3.0  | 0 | 4  | 5.00001287  |
| 47 | 2.7998  | 25300 | 0.7215 | 14 | 16 | 5.0  | 1 | 10 | 21.15489769 |
| 48 | 2.6961  | 16212 | 0.7215 | 10 | 10 | 11.0 | 0 | 22 | 7.14194584  |
| 49 | 7.5688  | 22650 | 0.6615 | 7  | 7  | 3.0  | 0 | 16 | 16.65007210 |
| 50 | 3.4077  | 6985  | 0.7815 | 12 | 7  | 14.0 | 0 | 6  | 6.35199976  |
| 51 | 6.5401  | 30000 | 0.6915 | 7  | 7  | 11.0 | 1 | 12 | 27.31394768 |
| 52 | 7.2139  | 18500 | 0.6915 | 7  | 3  | 9.5  | 1 | 32 | 14.50000381 |
| 53 | 6.2732  | 16658 | 0.7515 | 12 | 7  | 5.0  | 0 | 15 | 16.25798988 |
| 54 | 5.8824  | 10300 | 0.7515 | 7  | 7  | 5.0  | 1 | 17 | 9.50000000  |
| 55 | 3.8095  | 11000 | 0.7515 | 7  | 3  | 7.5  | 0 | 34 | 7.99995613  |
| 56 | 6.3776  | 19900 | 0.6915 | 12 | 12 | 7.5  | 1 | 9  | 12.50002861 |
| 57 | 6.0453  | 32500 | 0.6400 | 7  | 7  | 14.0 | 1 | 37 | 14.00003242 |
| 58 | 8.8119  | 37300 | 0.5800 | 17 | 17 | 7.5  | 1 | 10 | 20.80007362 |
| 59 | 8.8765  | 30018 | 0.5815 | 17 | 7  | 11.0 | 1 | 35 | 19.38511276 |
| 60 | 3.3420  | 12807 | 0.7515 | 12 | 7  | 14.0 | 1 | 6  | 12.38699150 |
| 61 | 3.1836  | 39500 | 0.5515 | 14 | 3  | 7.5  | 0 | 19 | 28.50000000 |
| 62 | 6.9149  | 22050 | 0.6915 | 12 | 12 | 9.5  | 1 | 10 | 15.04990864 |
| 63 | 5.5147  | 15500 | 0.7215 | 7  | 7  | 14.0 | 1 | 11 | 10.49998379 |
| 64 | 5.2808  | 13810 | 0.7215 | 7  | 7  | 9.5  | 1 | 15 | 11.81000042 |
| 65 | 3.2000  | 11950 | 0.7515 | 7  | 7  | 5.0  | 1 | 12 | 6.95007324  |
| 66 | 5.8791  | 19175 | 0.6915 | 12 | 12 | 7.5  | 0 | 12 | 12.41997147 |
| 67 | 6.2500  | 17900 | 0.6915 | 12 | 16 | 7.5  | 0 | 14 | 17.40000343 |
| 68 | 7.4879  | 15850 | 0.7215 | 12 | 7  | 5.0  | 1 | 11 | 15.49999619 |
| 69 | 6.9767  | 27017 | 0.6915 | 7  | 7  | 5.0  | 1 | 9  | 21.21704292 |
| 70 | 8.0000  | 18900 | 0.6915 | 12 | 7  | 5.0  | 0 | 24 | 18.00000000 |
| 71 | 4.1319  | 21800 | 0.6915 | 12 | 12 | 7.5  | 1 | 12 | 11.89991856 |
| 72 | 14.4760 | 33552 | 0.5515 | 10 | 10 | 7.5  | 1 | 13 | 26.75195503 |
| 73 | 5.7343  | 22650 | 0.6615 | 7  | 9  | 7.5  | 1 | 29 | 12.14996147 |
| 74 | 3.3742  | 15200 | 0.7915 | 0  | 0  | 7.5  | 1 | 11 | 10.19999027 |
| 75 | 1.8333  | 13120 | 0.7215 | 7  | 10 | 7.5  | 1 | 13 | 8.12001514  |
| 76 | 5.6025  | 21660 | 0.6615 | 12 | 14 | 5.0  | 1 | 19 | 10.65996456 |
| 77 | 4.2975  | 18190 | 0.7215 | 7  | 7  | 3.0  | 0 | 2  | 18.10000992 |
| 78 | 3.9161  | 9600  | 0.7515 | 3  | 3  | 14.0 | 1 | 24 | 8.59998608  |
| 79 | 4.8787  | 13755 | 0.7515 | 10 | 12 | 7.5  | 1 | 9  | 13.66499996 |

|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 80  | 9.2402  | 35350 | 0.6615 | 7  | 12 | 7.5  | 1 | 6  | 32.34996033 |
| 81  | 6.6519  | 12405 | 0.7215 | 12 | 7  | 7.5  | 1 | 22 | 12.08500576 |
| 82  | 4.6217  | 12180 | 0.7515 | 12 | 17 | 9.5  | 0 | 30 | 12.14999962 |
| 83  | 9.9741  | 22962 | 0.6615 | 7  | 3  | 7.5  | 1 | 10 | 17.69502068 |
| 84  | 20.9180 | 25700 | 0.6215 | 7  | 7  | 9.5  | 1 | 6  | 24.70000076 |
| 85  | 1.9400  | 3305  | 0.7915 | 7  | 7  | 3.0  | 0 | 29 | 2.13399196  |
| 86  | 8.8351  | 32950 | 0.5815 | 7  | 12 | 5.0  | 1 | 29 | 20.95004845 |
| 87  | 4.6667  | 17000 | 0.6915 | 7  | 7  | 5.0  | 1 | 36 | 10.50008011 |
| 88  | 5.1894  | 13250 | 0.7515 | 7  | 7  | 5.0  | 1 | 19 | 10.55000019 |
| 89  | 18.7240 | 50750 | 0.4415 | 7  | 12 | 5.0  | 1 | 8  | 45.75000000 |
| 90  | 10.4170 | 15632 | 0.7715 | 10 | 10 | 14.0 | 0 | 13 | 13.63204002 |
| 91  | 8.8458  | 28316 | 0.6215 | 7  | 0  | 11.0 | 1 | 16 | 18.23893929 |
| 92  | 7.5690  | 17290 | 0.7215 | 12 | 12 | 9.5  | 1 | 11 | 17.08999634 |
| 93  | 4.4507  | 33600 | 0.6215 | 10 | 10 | 7.5  | 1 | 15 | 30.23489952 |
| 94  | 9.3204  | 29200 | 0.6215 | 12 | 7  | 9.0  | 1 | 6  | 28.70000076 |
| 95  | 9.1687  | 19870 | 0.6915 | 7  | 7  | 11.0 | 0 | 13 | 19.62999535 |
| 96  | 6.4834  | 16225 | 0.7215 | 7  | 7  | 11.0 | 0 | 22 | 12.82494259 |
| 97  | 7.8125  | 28600 | 0.6915 | 7  | 3  | 5.0  | 1 | 24 | 23.79999924 |
| 98  | 11.4040 | 30800 | 0.5815 | 14 | 12 | 7.5  | 1 | 2  | 26.30002594 |
| 99  | 5.0870  | 25700 | 0.6915 | 7  | 7  | 3.0  | 0 | 6  | 20.69990730 |
| 100 | 6.9758  | 27000 | 0.6215 | 12 | 12 | 3.0  | 0 | 2  | 26.00000381 |
| 101 | 5.2863  | 12077 | 0.7715 | 12 | 7  | 9.5  | 1 | 2  | 10.87702084 |
| 102 | 11.5620 | 29612 | 0.6615 | 7  | 7  | 11.0 | 0 | 14 | 25.61206245 |
| 103 | 8.6061  | 24479 | 0.6915 | 7  | 10 | 9.5  | 1 | 9  | 20.98899460 |
| 104 | 12.8050 | 79750 | 0.4415 | 14 | 14 | 7.5  | 1 | 11 | 70.74993134 |
| 105 | 6.6946  | 20050 | 0.6915 | 12 | 7  | 11.0 | 0 | 9  | 17.04999924 |
| 106 | 8.3333  | 21500 | 0.6915 | 10 | 12 | 11.0 | 1 | 6  | 20.99999619 |
| 107 | 4.1667  | 16120 | 0.6915 | 7  | 7  | 5.0  | 0 | 19 | 8.11999989  |
| 108 | 5.4759  | 24686 | 0.7215 | 7  | 7  | 9.5  | 0 | 26 | 20.88599014 |
| 109 | 5.1440  | 24669 | 0.6915 | 7  | 10 | 9.5  | 1 | 19 | 17.66891861 |
| 110 | 11.6670 | 26400 | 0.6615 | 7  | 7  | 7.5  | 1 | 3  | 25.20002937 |
| 111 | 7.2917  | 16245 | 0.7215 | 12 | 12 | 7.5  | 1 | 7  | 14.24500561 |
| 112 | 4.8611  | 23300 | 0.6615 | 7  | 7  | 9.5  | 1 | 28 | 14.30000019 |
| 113 | 12.1640 | 27200 | 0.6215 | 12 | 7  | 9.5  | 1 | 13 | 23.70001030 |
| 114 | 10.8230 | 51000 | 0.4615 | 10 | 17 | 9.5  | 1 | 9  | 45.99999619 |
| 115 | 12.4780 | 55000 | 0.4615 | 10 | 7  | 14.0 | 1 | 15 | 42.99990463 |
| 116 | 6.1620  | 15389 | 0.7215 | 7  | 7  | 7.5  | 1 | 20 | 14.74899960 |
| 117 | 7.1846  | 23150 | 0.6615 | 7  | 7  | 9.5  | 1 | 29 | 16.15005493 |
| 118 | 7.0930  | 29774 | 0.6215 | 7  | 10 | 14.0 | 1 | 9  | 17.77400017 |
| 119 | 17.8260 | 91044 | 0.4415 | 12 | 10 | 14.0 | 1 | 1  | 91.00000000 |
| 120 | 6.3930  | 28200 | 0.5815 | 7  | 12 | 14.0 | 1 | 8  | 22.29993439 |
| 121 | 11.7190 | 36150 | 0.5515 | 7  | 7  | 9.5  | 1 | 19 | 34.60001373 |
| 122 | 4.7883  | 15652 | 0.7215 | 12 | 12 | 7.5  | 0 | 23 | 9.62000179  |

|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 123 | 4.2328  | 18900 | 0.7515 | 14 | 7  | 11.0 | 0 | 3  | 10.89994621 |
| 124 | 7.1066  | 23600 | 0.6615 | 12 | 10 | 7.5  | 0 | 13 | 14.49994373 |
| 125 | 8.3333  | 36200 | 0.6100 | 7  | 7  | 7.5  | 1 | 8  | 22.00001526 |
| 126 | 6.9888  | 18700 | 0.6915 | 10 | 10 | 7.5  | 0 | 17 | 17.90007973 |
| 127 | 9.5913  | 24125 | 0.6615 | 7  | 7  | 11.0 | 1 | 4  | 23.67506218 |
| 128 | 6.0204  | 15800 | 0.7215 | 7  | 7  | 7.5  | 0 | 15 | 11.79996014 |
| 129 | 2.9686  | 19742 | 0.7215 | 12 | 7  | 3.0  | 0 | 11 | 16.14195442 |
| 130 | 7.0000  | 22600 | 0.6915 | 10 | 7  | 9.5  | 0 | 7  | 18.39997101 |
| 131 | 7.1627  | 17500 | 0.7215 | 7  | 7  | 7.5  | 0 | 0  | 15.49994755 |
| 132 | 4.7364  | 19820 | 0.6915 | 7  | 7  | 7.5  | 0 | 0  | 17.32399940 |
| 133 | 8.7810  | 20155 | 0.6915 | 12 | 16 | 11.0 | 1 | 10 | 19.20500374 |
| 134 | 9.8315  | 37300 | 0.5800 | 10 | 12 | 7.5  | 1 | 8  | 21.30006218 |
| 135 | 6.6496  | 24860 | 0.7215 | 7  | 7  | 7.5  | 1 | 2  | 23.55999565 |
| 136 | 9.8485  | 21450 | 0.6615 | 12 | 3  | 7.5  | 1 | 4  | 20.85000038 |
| 137 | 9.8039  | 29650 | 0.6215 | 7  | 7  | 5.0  | 1 | 6  | 26.14999962 |
| 138 | 8.2604  | 23000 | 0.6615 | 7  | 7  | 11.0 | 1 | 18 | 17.00000000 |
| 139 | 9.0676  | 21120 | 0.6915 | 7  | 7  | 9.0  | 1 | 3  | 20.72000313 |
| 140 | 8.5082  | 26000 | 0.6215 | 7  | 12 | 5.0  | 1 | 22 | 17.00008965 |
| 141 | 7.1565  | 28000 | 0.6215 | 3  | 7  | 7.5  | 1 | 33 | 15.99999809 |
| 142 | 7.0423  | 45500 | 0.5200 | 12 | 12 | 11.0 | 1 | 28 | 19.50004959 |
| 143 | 6.5934  | 16000 | 0.7215 | 16 | 12 | 14.0 | 1 | 23 | 12.00000381 |
| 144 | 4.3457  | 18232 | 0.6915 | 7  | 14 | 11.0 | 0 | 27 | 13.73191166 |
| 145 | 7.2362  | 28160 | 0.7215 | 3  | 7  | 14.0 | 1 | 11 | 27.19999123 |
| 146 | 1.7400  | 5965  | 0.8015 | 12 | 7  | 11.0 | 1 | 6  | 5.31500006  |
| 147 | 6.8966  | 19000 | 0.7215 | 7  | 7  | 9.5  | 1 | 11 | 16.00000000 |
| 148 | 5.0455  | 36872 | 0.5515 | 12 | 12 | 11.0 | 1 | 14 | 27.87198257 |
| 149 | 17.2500 | 42000 | 0.4915 | 12 | 12 | 14.0 | 1 | 17 | 40.00001144 |
| 150 | 8.3333  | 26900 | 0.6215 | 16 | 14 | 11.0 | 1 | 17 | 15.90003395 |
| 151 | 9.3750  | 30800 | 0.5815 | 12 | 10 | 9.0  | 0 | 14 | 27.49996948 |
| 152 | 8.2790  | 21520 | 0.6915 | 12 | 12 | 11.0 | 1 | 11 | 17.02005005 |
| 153 | 4.5000  | 24795 | 0.6915 | 7  | 7  | 7.5  | 1 | 7  | 22.39493942 |
| 154 | 4.1995  | 12900 | 0.7215 | 14 | 16 | 14.0 | 1 | 8  | 11.10000038 |
| 155 | 16.0640 | 42700 | 0.4915 | 7  | 7  | 7.5  | 1 | 6  | 32.70001221 |
| 156 | 11.2770 | 38800 | 0.5215 | 10 | 17 | 11.0 | 1 | 8  | 27.79996109 |
| 157 | 0.5494  | 2500  | 0.9415 | 7  | 3  | 3.0  | 0 | 4  | 2.19999409  |
| 158 | 9.5480  | 26921 | 0.6215 | 14 | 10 | 11.0 | 1 | 25 | 19.72095108 |
| 159 | 5.3333  | 18300 | 0.6915 | 7  | 9  | 3.0  | 0 | 24 | 9.99998760  |
| 160 | 5.4545  | 17200 | 0.7215 | 7  | 7  | 14.0 | 1 | 11 | 13.19996834 |
| 161 | 5.9026  | 14209 | 0.7515 | 12 | 3  | 9.5  | 1 | 19 | 12.70897484 |
| 162 | 9.8576  | 32300 | 0.5815 | 12 | 16 | 14.0 | 1 | 9  | 27.30004692 |
| 163 | 11.6850 | 21400 | 0.7215 | 17 | 12 | 7.5  | 1 | 19 | 21.20000076 |
| 164 | 6.2278  | 14700 | 0.7215 | 7  | 7  | 9.5  | 0 | 14 | 14.40000439 |
| 165 | 9.1748  | 25516 | 0.6215 | 7  | 7  | 9.5  | 1 | 22 | 20.57596016 |

|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 166 | 6.2972  | 13300 | 0.7515 | 3  | 7  | 5.0  | 1 | 6  | 12.49999046 |
| 167 | 10.4710 | 31000 | 0.5815 | 12 | 12 | 9.5  | 1 | 23 | 17.50021553 |
| 168 | 14.5830 | 48800 | 0.4915 | 7  | 3  | 11.0 | 1 | 15 | 44.00003815 |
| 169 | 6.2143  | 15519 | 0.7215 | 7  | 7  | 14.0 | 1 | 6  | 13.11895466 |
| 170 | 6.6288  | 19500 | 0.6915 | 7  | 7  | 7.5  | 0 | 11 | 14.00005627 |
| 171 | 3.8246  | 14545 | 0.7215 | 3  | 7  | 5.0  | 0 | 2  | 9.64508629  |
| 172 | 7.8125  | 22897 | 0.6915 | 7  | 7  | 14.0 | 1 | 22 | 17.39704514 |
| 173 | 3.4806  | 14300 | 0.7215 | 10 | 10 | 7.5  | 1 | 10 | 7.79988861  |
| 174 | 5.5500  | 14884 | 0.7515 | 10 | 10 | 9.5  | 1 | 14 | 13.13397694 |
| 175 | 11.5940 | 27400 | 0.6215 | 12 | 7  | 11.0 | 1 | 12 | 25.60000038 |
| 176 | 9.5238  | 16400 | 0.7215 | 7  | 12 | 14.0 | 1 | 9  | 13.90002537 |
| 177 | 7.2805  | 25704 | 0.6215 | 14 | 17 | 7.5  | 0 | 13 | 19.29794312 |
| 178 | 3.0000  | 12800 | 0.7215 | 10 | 10 | 7.5  | 0 | 18 | 9.20001602  |
| 179 | 10.4000 | 40000 | 0.6215 | 7  | 7  | 7.5  | 0 | 8  | 37.99998856 |
| 180 | 10.0500 | 47000 | 0.6615 | 7  | 7  | 14.0 | 1 | 11 | 44.00000000 |
| 181 | 8.7866  | 25872 | 0.6615 | 10 | 12 | 9.5  | 1 | 9  | 21.37202454 |
| 182 | 10.1400 | 26868 | 0.6915 | 12 | 7  | 9.5  | 1 | 9  | 23.66802025 |
| 183 | 5.0000  | 18000 | 0.6915 | 12 | 12 | 9.5  | 1 | 14 | 9.00000000  |
| 184 | 11.8880 | 30200 | 0.5815 | 7  | 7  | 5.0  | 1 | 9  | 25.19995117 |
| 185 | 13.3330 | 26220 | 0.6615 | 7  | 7  | 7.5  | 1 | 2  | 21.21999931 |
| 186 | 8.6806  | 40500 | 0.5815 | 7  | 7  | 3.0  | 0 | 12 | 33.96991348 |
| 187 | 7.2917  | 33570 | 0.6100 | 12 | 7  | 7.5  | 1 | 15 | 17.06999969 |
| 188 | 3.5242  | 16917 | 0.7215 | 7  | 14 | 14.0 | 1 | 11 | 6.01602364  |
| 189 | 6.1818  | 18000 | 0.7215 | 12 | 7  | 9.5  | 0 | 7  | 17.10000992 |
| 190 | 2.9755  | 8337  | 0.7515 | 12 | 12 | 11.0 | 1 | 9  | 8.23700047  |
| 191 | 4.5769  | 17100 | 0.7215 | 12 | 7  | 9.5  | 0 | 19 | 13.30008221 |
| 192 | 3.1056  | 17800 | 0.7515 | 10 | 7  | 11.0 | 0 | 11 | 16.00002098 |
| 193 | 5.8228  | 13740 | 0.7515 | 12 | 12 | 14.0 | 1 | 8  | 12.53999043 |
| 194 | 7.5000  | 27000 | 0.6215 | 10 | 3  | 9.5  | 1 | 13 | 18.00003815 |
| 195 | 8.3333  | 32600 | 0.6215 | 12 | 7  | 7.5  | 1 | 4  | 31.20000076 |
| 196 | 9.2347  | 28030 | 0.6615 | 12 | 12 | 14.0 | 1 | 7  | 20.74991035 |
| 197 | 5.5000  | 23100 | 0.6615 | 12 | 12 | 3.0  | 0 | 19 | 11.09992027 |
| 198 | 6.0000  | 24580 | 0.6615 | 7  | 7  | 9.5  | 1 | 14 | 20.68000031 |
| 199 | 6.6667  | 29000 | 0.6215 | 12 | 7  | 9.5  | 1 | 14 | 18.00000954 |
| 200 | 13.0610 | 42430 | 0.5215 | 12 | 14 | 9.5  | 1 | 3  | 32.43006516 |
| 201 | 12.7940 | 41800 | 0.5215 | 12 | 12 | 7.5  | 1 | 9  | 32.90003204 |
| 202 | 12.0000 | 39100 | 0.5800 | 12 | 17 | 9.5  | 1 | 7  | 24.10000610 |
| 203 | 6.7300  | 31800 | 0.5815 | 16 | 17 | 11.0 | 1 | 7  | 17.80039215 |
| 204 | 6.6790  | 22200 | 0.6915 | 7  | 7  | 14.0 | 0 | 14 | 20.50001717 |
| 205 | 4.3945  | 19500 | 0.6915 | 16 | 7  | 3.0  | 0 | 29 | 10.49989796 |
| 206 | 4.6875  | 14027 | 0.7515 | 7  | 10 | 11.0 | 0 | 19 | 10.43703461 |
| 207 | 7.6989  | 21195 | 0.6615 | 7  | 7  | 11.0 | 1 | 14 | 18.19499016 |
| 208 | 4.3287  | 19013 | 0.6915 | 10 | 7  | 7.5  | 0 | 16 | 12.84507656 |

|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 209 | 6.7416  | 20900 | 0.6615 | 12 | 7  | 11.0 | 1 | 10 | 13.80000019 |
| 210 | 9.3525  | 26820 | 0.6215 | 10 | 3  | 11.0 | 0 | 12 | 22.19999504 |
| 211 | 9.1429  | 12800 | 0.7515 | 0  | 0  | 14.0 | 1 | 24 | 6.69994116  |
| 212 | 2.6418  | 7850  | 0.7515 | 7  | 7  | 14.0 | 0 | 6  | 6.25001574  |
| 213 | 7.3650  | 18600 | 0.7215 | 12 | 12 | 7.5  | 1 | 9  | 15.60000801 |
| 214 | 1.4066  | 5380  | 0.7715 | 12 | 7  | 5.0  | 0 | 14 | 3.30000997  |
| 215 | 1.5192  | 6114  | 0.7715 | 10 | 7  | 14.0 | 0 | 26 | 3.67097759  |
| 216 | 3.3439  | 8234  | 0.7515 | 12 | 12 | 14.0 | 0 | 7  | 7.78999710  |
| 217 | 2.9106  | 20646 | 0.7215 | 3  | 7  | 11.0 | 1 | 4  | 18.27198982 |
| 218 | 4.3834  | 16640 | 0.7215 | 7  | 7  | 9.5  | 0 | 15 | 10.95397949 |
| 219 | 4.2098  | 13900 | 0.7215 | 12 | 12 | 5.0  | 1 | 23 | 13.49999237 |
| 220 | 3.7129  | 11500 | 0.7815 | 10 | 7  | 7.5  | 0 | 1  | 11.20001221 |
| 221 | 10.6060 | 34000 | 0.5515 | 7  | 7  | 14.0 | 1 | 29 | 20.99990845 |
| 222 | 8.6382  | 28700 | 0.6615 | 7  | 3  | 11.0 | 1 | 9  | 25.69999886 |
| 223 | 3.8367  | 9563  | 0.7515 | 7  | 7  | 7.5  | 0 | 6  | 8.93299389  |
| 224 | 7.1671  | 20960 | 0.6915 | 7  | 7  | 7.5  | 0 | 11 | 19.15997696 |
| 225 | 8.8634  | 38590 | 0.6215 | 12 | 10 | 14.0 | 1 | 17 | 26.58998680 |
| 226 | 7.7369  | 27900 | 0.6615 | 12 | 12 | 5.0  | 1 | 6  | 22.40000534 |
| 227 | 9.1702  | 25633 | 0.6215 | 7  | 7  | 7.5  | 1 | 7  | 20.63299942 |
| 228 | 11.2900 | 35200 | 0.5515 | 12 | 12 | 7.5  | 1 | 2  | 28.20000648 |
| 229 | 6.3269  | 29500 | 0.5815 | 7  | 7  | 7.5  | 1 | 24 | 28.79999924 |
| 230 | 4.7468  | 10000 | 0.7515 | 10 | 7  | 7.5  | 0 | 4  | 8.99999714  |
| 231 | 4.8885  | 19800 | 0.6915 | 10 | 7  | 5.0  | 0 | 11 | 11.39994240 |
| 232 | 2.4842  | 12900 | 0.7215 | 7  | 7  | 5.0  | 0 | 25 | 10.40001392 |
| 233 | 8.5470  | 26080 | 0.6215 | 12 | 12 | 7.5  | 0 | 11 | 19.08005524 |
| 234 | 6.6379  | 13066 | 0.7515 | 17 | 7  | 11.0 | 1 | 2  | 9.46603966  |
| 235 | 3.1863  | 12500 | 0.7215 | 7  | 7  | 7.5  | 0 | 19 | 6.50006008  |
| 236 | 4.5466  | 35600 | 0.5815 | 7  | 7  | 9.0  | 1 | 7  | 29.11701393 |
| 237 | 12.7890 | 19424 | 0.7515 | 7  | 7  | 5.0  | 1 | 2  | 19.10301971 |
| 238 | 6.5280  | 26250 | 0.6615 | 7  | 7  | 5.0  | 1 | 20 | 16.34997177 |
| 239 | 16.4030 | 36525 | 0.5515 | 12 | 14 | 9.5  | 1 | 10 | 32.02501678 |
| 240 | 7.0000  | 34700 | 0.6100 | 14 | 17 | 14.0 | 1 | 19 | 16.70006180 |
| 241 | 13.5420 | 8311  | 0.7515 | 7  | 7  | 11.0 | 1 | 17 | 4.81103754  |
| 242 | 6.7130  | 28626 | 0.6915 | 12 | 10 | 11.0 | 1 | 12 | 24.62600899 |
| 243 | 5.4487  | 24400 | 0.6615 | 7  | 7  | 5.0  | 1 | 11 | 17.40001297 |
| 244 | 6.6872  | 14025 | 0.7215 | 7  | 7  | 7.5  | 1 | 6  | 13.02503967 |
| 245 | 9.0943  | 21367 | 0.6915 | 16 | 12 | 14.0 | 1 | 10 | 19.00698280 |
| 246 | 6.5337  | 14136 | 0.7515 | 7  | 7  | 7.5  | 0 | 4  | 14.02999973 |
| 247 | 4.6860  | 19900 | 0.7515 | 10 | 7  | 5.0  | 1 | 2  | 14.89990616 |
| 248 | 8.0000  | 37000 | 0.5215 | 12 | 9  | 9.5  | 1 | 13 | 25.00005531 |
| 249 | 4.0530  | 18500 | 0.6915 | 7  | 7  | 7.5  | 0 | 21 | 10.70006752 |
| 250 | 8.1633  | 34550 | 0.5515 | 16 | 14 | 5.0  | 1 | 9  | 24.25000381 |
| 251 | 16.5000 | 49620 | 0.4615 | 10 | 7  | 11.0 | 1 | 4  | 39.13996506 |

|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 252 | 3.4615  | 10400 | 0.7815 | 3  | 3  | 7.5  | 0 | 2  | 7.19997311  |
| 253 | 11.3610 | 33000 | 0.5515 | 16 | 16 | 11.0 | 1 | 19 | 31.81099892 |
| 254 | 3.8911  | 16200 | 0.7215 | 7  | 3  | 7.5  | 1 | 4  | 10.00004768 |
| 255 | 9.6059  | 22660 | 0.6915 | 12 | 16 | 7.5  | 1 | 9  | 20.65999985 |
| 256 | 2.6687  | 16000 | 0.7215 | 7  | 7  | 7.5  | 1 | 14 | 13.49997616 |
| 257 | 8.8865  | 25780 | 0.6615 | 7  | 16 | 9.5  | 1 | 6  | 25.37999535 |
| 258 | 6.3636  | 20675 | 0.7215 | 7  | 12 | 7.5  | 1 | 24 | 18.27497673 |
| 259 | 17.7280 | 40213 | 0.5515 | 12 | 7  | 11.0 | 0 | 1  | 39.21300125 |
| 260 | 5.2923  | 15500 | 0.7215 | 12 | 7  | 7.5  | 1 | 13 | 10.49993610 |
| 261 | 15.6860 | 35207 | 0.5815 | 7  | 12 | 9.5  | 1 | 3  | 34.85699844 |
| 262 | 5.2423  | 35702 | 0.5515 | 10 | 12 | 11.0 | 1 | 10 | 28.50199890 |
| 263 | 3.0395  | 17800 | 0.7215 | 14 | 12 | 9.5  | 1 | 16 | 12.99995995 |
| 264 | 16.7450 | 50900 | 0.4915 | 16 | 16 | 5.0  | 1 | 9  | 41.39990997 |
| 265 | 3.7500  | 17280 | 0.6915 | 7  | 7  | 5.0  | 0 | 19 | 14.77999973 |
| 266 | 5.8140  | 15150 | 0.7215 | 10 | 9  | 5.0  | 1 | 4  | 15.04999828 |
| 267 | 10.8330 | 36200 | 0.5815 | 7  | 7  | 7.5  | 1 | 10 | 29.69997787 |
| 268 | 9.0029  | 17465 | 0.7215 | 14 | 12 | 5.0  | 1 | 5  | 16.16501999 |
| 269 | 6.5400  | 45205 | 0.6100 | 14 | 12 | 3.0  | 1 | 7  | 25.20515823 |
| 270 | 5.9783  | 14500 | 0.7515 | 12 | 10 | 5.0  | 0 | 3  | 14.19999886 |
| 271 | 8.6248  | 32011 | 0.5815 | 7  | 7  | 7.5  | 0 | 38 | 18.15896797 |
| 272 | 4.8329  | 35200 | 0.6215 | 7  | 12 | 9.5  | 0 | 16 | 28.98106384 |
| 273 | 10.9090 | 13579 | 0.7515 | 3  | 7  | 11.0 | 0 | 13 | 13.39200306 |
| 274 | 3.8864  | 10455 | 0.7515 | 7  | 7  | 11.0 | 0 | 1  | 9.17502022  |
| 275 | 8.4574  | 32600 | 0.5515 | 7  | 3  | 5.0  | 0 | 7  | 27.03984833 |
| 276 | 5.0000  | 19150 | 0.6915 | 7  | 10 | 11.0 | 1 | 15 | 13.14995193 |
| 277 | 7.4212  | 24400 | 0.6615 | 12 | 17 | 9.5  | 1 | 10 | 16.40007019 |
| 278 | 4.4938  | 21700 | 0.6915 | 10 | 7  | 3.0  | 0 | 2  | 21.29999161 |
| 279 | 7.0252  | 26201 | 0.6215 | 7  | 3  | 9.5  | 1 | 19 | 17.20101547 |
| 280 | 3.2788  | 11920 | 0.7515 | 3  | 3  | 7.5  | 1 | 25 | 8.56002617  |
| 281 | 1.2861  | 16300 | 0.7215 | 12 | 12 | 9.5  | 1 | 25 | 6.49083996  |
| 282 | 5.5556  | 16500 | 0.7215 | 7  | 7  | 5.0  | 1 | 7  | 12.49996758 |
| 283 | 7.4951  | 30000 | 0.5815 | 12 | 7  | 11.0 | 1 | 15 | 27.00002480 |
| 284 | 22.1090 | 62500 | 0.4415 | 7  | 7  | 9.5  | 1 | 11 | 53.50004959 |
| 285 | 9.0580  | 58500 | 0.4415 | 10 | 10 | 9.5  | 1 | 25 | 52.49994659 |
| 286 | 11.5380 | 40900 | 0.5215 | 7  | 7  | 9.5  | 1 | 19 | 38.39997864 |
| 287 | 6.0468  | 16308 | 0.6915 | 0  | 10 | 7.5  | 1 | 4  | 13.89194489 |
| 288 | 1.3653  | 9300  | 0.7515 | 7  | 7  | 7.5  | 1 | 14 | 3.89999294  |
| 289 | 16.5500 | 35700 | 0.5515 | 10 | 9  | 7.5  | 1 | 19 | 34.19999695 |
| 290 | 8.7719  | 35700 | 0.6400 | 9  | 9  | 11.0 | 1 | 18 | 19.70007896 |
| 291 | 9.6354  | 24500 | 0.6615 | 12 | 12 | 5.0  | 1 | 14 | 18.49995232 |
| 292 | 6.6788  | 13000 | 0.7215 | 12 | 12 | 7.5  | 1 | 11 | 10.99997616 |
| 293 | 7.5727  | 52600 | 0.4415 | 12 | 12 | 5.0  | 0 | 4  | 43.30001068 |
| 294 | 7.8125  | 25360 | 0.6615 | 3  | 7  | 7.5  | 1 | 29 | 18.76000786 |

|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 295 | 1.9835  | 9400  | 0.7515 | 9  | 9  | 7.5  | 0 | 21 | 4.80009604  |
| 296 | 9.5238  | 26800 | 0.6215 | 12 | 12 | 11.0 | 1 | 24 | 21.50000191 |
| 297 | 6.4250  | 33040 | 0.6615 | 12 | 7  | 7.5  | 1 | 19 | 28.03993797 |
| 298 | 10.9840 | 26350 | 0.6215 | 14 | 12 | 7.5  | 1 | 31 | 26.00000381 |
| 299 | 12.7660 | 39000 | 0.5215 | 7  | 7  | 14.0 | 1 | 28 | 27.00000000 |
| 300 | 9.5545  | 35100 | 0.6100 | 12 | 12 | 9.5  | 1 | 15 | 17.79968834 |
| 301 | 5.4967  | 22502 | 0.6615 | 12 | 12 | 11.0 | 0 | 27 | 17.40194511 |
| 302 | 9.7618  | 21950 | 0.6915 | 12 | 14 | 14.0 | 0 | 13 | 19.30999184 |
| 303 | 5.0000  | 13000 | 0.7515 | 7  | 7  | 7.5  | 0 | 4  | 9.99997997  |
| 304 | 5.9995  | 18180 | 0.7215 | 12 | 14 | 9.0  | 1 | 10 | 11.17998028 |
| 305 | 6.9149  | 20957 | 0.6915 | 10 | 10 | 9.0  | 1 | 8  | 18.85695648 |
| 306 | 4.9669  | 13700 | 0.7215 | 12 | 12 | 7.5  | 0 | 4  | 12.30002022 |
| 307 | 2.3896  | 20000 | 0.6915 | 7  | 7  | 5.0  | 1 | 18 | 13.67711830 |
| 308 | 4.5122  | 12260 | 0.7515 | 7  | 7  | 5.0  | 1 | 3  | 9.55999660  |
| 309 | 9.2308  | 24850 | 0.6615 | 3  | 12 | 7.5  | 1 | 11 | 24.49998474 |
| 310 | 11.4580 | 29150 | 0.5815 | 12 | 7  | 7.5  | 1 | 8  | 23.14999962 |
| 311 | 7.6993  | 23591 | 0.6615 | 7  | 7  | 11.0 | 1 | 10 | 15.59088326 |
| 312 | 4.1830  | 24717 | 0.6615 | 16 | 12 | 11.0 | 1 | 33 | 14.42092419 |
| 313 | 8.3333  | 30455 | 0.6215 | 12 | 12 | 9.0  | 1 | 19 | 17.45490837 |
| 314 | 5.1042  | 19600 | 0.6915 | 12 | 12 | 7.5  | 1 | 35 | 9.80001926  |
| 315 | 8.2271  | 31875 | 0.6400 | 7  | 12 | 5.0  | 1 | 21 | 17.57446480 |
| 316 | 5.6634  | 24055 | 0.6615 | 14 | 14 | 7.5  | 0 | 7  | 16.55500031 |
| 317 | 5.2220  | 18795 | 0.7215 | 7  | 10 | 7.5  | 0 | 18 | 13.29497433 |
| 318 | 7.1900  | 12198 | 0.7515 | 7  | 7  | 7.5  | 0 | 4  | 11.84400272 |
| 319 | 13.9070 | 52645 | 0.4915 | 12 | 7  | 7.5  | 1 | 12 | 46.64506149 |
| 320 | 6.0163  | 16600 | 0.7215 | 10 | 7  | 14.0 | 0 | 16 | 14.69998932 |
| 321 | 7.6782  | 32590 | 0.6215 | 7  | 7  | 7.5  | 1 | 14 | 26.09008026 |
| 322 | 5.3112  | 10020 | 0.7515 | 3  | 7  | 7.5  | 1 | 3  | 9.89999962  |
| 323 | 4.1228  | 12048 | 0.7515 | 7  | 7  | 11.0 | 0 | 1  | 9.04802608  |
| 324 | 7.8125  | 39750 | 0.6215 | 7  | 7  | 11.0 | 0 | 27 | 30.75006485 |
| 325 | 4.6053  | 15700 | 0.7215 | 10 | 7  | 7.5  | 1 | 12 | 8.49993992  |
| 326 | 3.9746  | 24250 | 0.6615 | 7  | 7  | 3.0  | 0 | 6  | 22.24999237 |
| 327 | 15.0630 | 43210 | 0.5215 | 7  | 12 | 14.0 | 1 | 9  | 42.90999985 |
| 328 | 4.5064  | 37100 | 0.6215 | 12 | 12 | 5.0  | 0 | 2  | 33.29999924 |
| 329 | 5.8824  | 23820 | 0.6615 | 12 | 7  | 5.0  | 0 | 6  | 13.81990337 |
| 330 | 10.2280 | 31600 | 0.5815 | 12 | 14 | 5.0  | 1 | 9  | 23.60000801 |
| 331 | 6.5789  | 24000 | 0.6615 | 10 | 10 | 7.5  | 1 | 16 | 13.00006771 |
| 332 | 8.8145  | 30750 | 0.5815 | 14 | 12 | 5.0  | 0 | 22 | 20.74994087 |
| 333 | 2.9528  | 11050 | 0.7515 | 7  | 7  | 14.0 | 0 | 26 | 6.30000019  |
| 334 | 4.5173  | 12239 | 0.7515 | 7  | 7  | 14.0 | 0 | 11 | 7.78892469  |
| 335 | 5.1282  | 12870 | 0.7515 | 14 | 12 | 7.5  | 1 | 11 | 10.47004032 |
| 336 | 4.1451  | 17200 | 0.7215 | 10 | 7  | 7.5  | 0 | 15 | 12.00000000 |
| 337 | 8.7912  | 23980 | 0.6615 | 10 | 10 | 7.5  | 0 | 13 | 16.97991562 |

|     |         |       |        |    |    |      |   |    |              |
|-----|---------|-------|--------|----|----|------|---|----|--------------|
| 338 | 7.3061  | 18600 | 0.6915 | 7  | 12 | 14.0 | 1 | 6  | 17.899999962 |
| 339 | 6.0069  | 23920 | 0.6915 | 7  | 10 | 9.5  | 1 | 20 | 15.53993702  |
| 340 | 8.3333  | 16084 | 0.7515 | 7  | 7  | 14.0 | 1 | 17 | 9.88398552   |
| 341 | 11.5290 | 31100 | 0.5815 | 14 | 14 | 11.0 | 1 | 8  | 28.59995079  |
| 342 | 6.6667  | 20460 | 0.6615 | 7  | 7  | 11.0 | 1 | 13 | 17.66001129  |
| 343 | 8.6806  | 36000 | 0.5515 | 12 | 12 | 7.5  | 1 | 15 | 25.99991798  |
| 344 | 3.4680  | 17302 | 0.7215 | 14 | 12 | 3.0  | 0 | 14 | 13.60200977  |
| 345 | 3.0321  | 16450 | 0.7215 | 14 | 7  | 3.0  | 0 | 14 | 15.80000019  |
| 346 | 13.8070 | 41170 | 0.5815 | 14 | 16 | 9.5  | 1 | 6  | 41.09999466  |
| 347 | 6.2174  | 20130 | 0.6615 | 0  | 0  | 7.5  | 1 | 24 | 10.77504158  |
| 348 | 4.2308  | 9200  | 0.7515 | 16 | 12 | 9.5  | 1 | 10 | 9.00004673   |
| 349 | 11.4700 | 24751 | 0.6615 | 7  | 7  | 11.0 | 1 | 2  | 24.39899445  |
| 350 | 12.2450 | 57300 | 0.5000 | 12 | 17 | 9.5  | 1 | 9  | 37.30009079  |
| 351 | 9.2105  | 37200 | 0.5815 | 7  | 7  | 7.5  | 1 | 23 | 27.99994850  |
| 352 | 6.3309  | 14000 | 0.7215 | 10 | 12 | 14.0 | 1 | 12 | 13.70000267  |
| 353 | 7.8039  | 20610 | 0.6915 | 7  | 3  | 14.0 | 0 | 8  | 17.20994377  |
| 354 | 7.6754  | 14800 | 0.7215 | 10 | 7  | 7.5  | 1 | 16 | 14.00001431  |
| 355 | 15.5820 | 40005 | 0.5515 | 10 | 14 | 14.0 | 1 | 10 | 35.75502014  |
| 356 | 9.6436  | 23750 | 0.6615 | 14 | 7  | 14.0 | 1 | 7  | 23.49999619  |
| 357 | 12.8860 | 35300 | 0.5515 | 7  | 12 | 14.0 | 1 | 19 | 31.99993324  |
| 358 | 6.5511  | 17350 | 0.6915 | 12 | 12 | 7.5  | 1 | 2  | 17.14999580  |
| 359 | 8.2500  | 21650 | 0.6615 | 7  | 7  | 7.5  | 1 | 9  | 20.25002480  |
| 360 | 1.3792  | 6740  | 0.7915 | 7  | 7  | 14.0 | 0 | 14 | 5.48598480   |
| 361 | 5.2632  | 32275 | 0.6915 | 12 | 14 | 5.0  | 1 | 9  | 25.07504082  |
| 362 | 10.5260 | 33220 | 0.7200 | 14 | 7  | 9.5  | 1 | 16 | 18.21995163  |
| 363 | 10.0000 | 26500 | 0.6215 | 12 | 12 | 7.5  | 1 | 7  | 25.99999619  |
| 364 | 12.5480 | 38700 | 0.5215 | 7  | 12 | 5.0  | 1 | 6  | 34.50007248  |
| 365 | 4.6207  | 15400 | 0.7215 | 7  | 7  | 5.0  | 1 | 22 | 12.39999962  |
| 366 | 1.8540  | 19007 | 0.6915 | 7  | 7  | 3.0  | 0 | 9  | 10.78684998  |
| 367 | 7.4266  | 16771 | 0.7215 | 12 | 7  | 7.5  | 0 | 9  | 16.32300758  |
| 368 | 13.2980 | 31100 | 0.5815 | 16 | 7  | 11.0 | 1 | 14 | 30.50000000  |
| 369 | 26.5780 | 66300 | 0.5000 | 3  | 3  | 7.5  | 1 | 17 | 51.29962540  |
| 370 | 13.9590 | 43550 | 0.4915 | 16 | 12 | 5.0  | 0 | 12 | 33.04997253  |
| 371 | 13.1260 | 37250 | 0.6215 | 7  | 7  | 11.0 | 0 | 13 | 34.75001144  |
| 372 | 7.8883  | 24900 | 0.6615 | 16 | 7  | 14.0 | 0 | 8  | 16.40003967  |
| 373 | 8.6560  | 24200 | 0.6615 | 7  | 14 | 9.5  | 1 | 10 | 19.70007324  |
| 374 | 3.4109  | 16200 | 0.7215 | 10 | 10 | 14.0 | 0 | 16 | 6.60000277   |
| 375 | 4.6256  | 11431 | 0.7515 | 10 | 10 | 7.5  | 0 | 1  | 9.02000809   |
| 376 | 4.2105  | 13200 | 0.7515 | 10 | 10 | 11.0 | 0 | 6  | 10.40000820  |
| 377 | 4.2708  | 15420 | 0.7715 | 10 | 10 | 9.0  | 1 | 4  | 14.51998806  |
| 378 | 3.3424  | 18400 | 0.6915 | 12 | 12 | 14.0 | 0 | 8  | 17.19999695  |
| 379 | 8.6359  | 43500 | 0.4915 | 10 | 3  | 5.0  | 1 | 4  | 43.00000000  |
| 380 | 6.7581  | 21972 | 0.6915 | 7  | 7  | 7.5  | 1 | 15 | 13.87195969  |



|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 381 | 0.5843  | 7774  | 0.7715 | 16 | 16 | 11.0 | 0 | 7  | -0.02905745 |
| 382 | 5.3350  | 24470 | 0.6915 | 7  | 7  | 7.5  | 0 | 14 | 16.76994324 |
| 383 | 4.7101  | 13600 | 0.7215 | 7  | 7  | 7.5  | 0 | 16 | 7.79999971  |
| 384 | 4.9797  | 22500 | 0.7215 | 7  | 0  | 7.5  | 0 | 15 | 14.50006390 |
| 385 | 2.9762  | 13600 | 0.7215 | 7  | 7  | 14.0 | 0 | 23 | 7.90000010  |
| 386 | 12.7440 | 90800 | 0.4415 | 7  | 7  | 7.5  | 0 | 19 | 79.80001068 |
| 387 | 3.8462  | 10776 | 0.7515 | 10 | 10 | 7.5  | 0 | 4  | 7.17597008  |
| 388 | 7.2233  | 19007 | 0.7515 | 10 | 7  | 5.0  | 1 | 12 | 17.50698280 |
| 389 | 8.8077  | 23900 | 0.6615 | 12 | 12 | 14.0 | 1 | 12 | 20.60000038 |
| 390 | 5.3864  | 26060 | 0.6215 | 7  | 7  | 7.5  | 1 | 25 | 18.55991554 |
| 391 | 3.6846  | 13300 | 0.7215 | 7  | 7  | 7.5  | 0 | 14 | 9.30000019  |
| 392 | 1.8437  | 15620 | 0.7215 | 7  | 7  | 7.5  | 0 | 14 | 5.12000751  |
| 393 | 1.3013  | 16500 | 0.7215 | 7  | 7  | 7.5  | 0 | 11 | 14.50003815 |
| 394 | 7.2222  | 20880 | 0.6915 | 14 | 16 | 5.0  | 1 | 7  | 19.79999924 |
| 395 | 7.3529  | 30600 | 0.6615 | 14 | 12 | 9.5  | 1 | 18 | 18.29994965 |
| 396 | 11.8640 | 39000 | 0.6215 | 7  | 10 | 9.0  | 1 | 4  | 33.99993515 |
| 397 | 5.3327  | 15428 | 0.7215 | 7  | 7  | 7.5  | 0 | 37 | 11.62793636 |
| 398 | 5.5000  | 23300 | 0.6615 | 7  | 7  | 7.5  | 0 | 13 | 11.80004597 |
| 399 | 7.2308  | 42100 | 0.5215 | 16 | 16 | 9.5  | 1 | 14 | 39.09997559 |
| 400 | 7.0000  | 36430 | 0.6400 | 12 | 7  | 9.5  | 1 | 17 | 18.43007088 |
| 401 | 7.2137  | 26000 | 0.6915 | 7  | 7  | 9.5  | 1 | 5  | 21.00000000 |
| 402 | 4.5000  | 62060 | 0.7515 | 7  | 7  | 7.5  | 0 | 2  | 59.00000000 |
| 403 | 8.8632  | 28300 | 0.6215 | 12 | 12 | 9.5  | 1 | 0  | 25.29999924 |
| 404 | 9.3333  | 24149 | 0.6615 | 12 | 10 | 7.5  | 1 | 3  | 23.24899101 |
| 405 | 3.8263  | 28141 | 0.6615 | 12 | 10 | 7.5  | 1 | 21 | 24.92808723 |
| 406 | 5.4448  | 23057 | 0.6615 | 10 | 10 | 7.5  | 1 | 20 | 14.78198814 |
| 407 | 8.7634  | 28900 | 0.6215 | 3  | 7  | 7.5  | 1 | 19 | 18.90002823 |
| 408 | 8.4000  | 24000 | 0.6615 | 12 | 10 | 9.5  | 1 | 4  | 21.00000000 |
| 409 | 5.1020  | 13900 | 0.7215 | 12 | 12 | 7.5  | 0 | 19 | 10.00000954 |
| 410 | 7.4101  | 31810 | 0.6915 | 12 | 12 | 5.0  | 1 | 11 | 29.30997467 |
| 411 | 5.3527  | 19840 | 0.6915 | 7  | 7  | 7.5  | 0 | 14 | 13.14003181 |
| 412 | 19.5620 | 25490 | 0.6615 | 16 | 17 | 14.0 | 1 | 8  | 25.08999443 |
| 413 | 5.0783  | 20800 | 0.6915 | 12 | 12 | 7.5  | 0 | 13 | 14.59993172 |
| 414 | 0.5128  | 2400  | 0.8015 | 10 | 16 | 7.5  | 1 | 24 | 1.20000124  |
| 415 | 5.4020  | 32650 | 0.5815 | 10 | 10 | 14.0 | 1 | 1  | 32.00000381 |
| 416 | 7.8646  | 16370 | 0.7215 | 12 | 16 | 11.0 | 1 | 1  | 16.11997032 |
| 417 | 6.0531  | 35500 | 0.5515 | 7  | 7  | 14.0 | 0 | 3  | 26.50002289 |
| 418 | 5.0000  | 15100 | 0.7515 | 7  | 7  | 3.0  | 0 | 4  | 12.75005531 |
| 419 | 7.6829  | 14100 | 0.7515 | 7  | 9  | 3.0  | 0 | 21 | 12.89999962 |
| 420 | 6.0386  | 19600 | 0.7215 | 7  | 3  | 14.0 | 0 | 10 | 10.69997501 |
| 421 | 5.8510  | 19434 | 0.7215 | 7  | 7  | 5.0  | 1 | 13 | 14.43403149 |
| 422 | 6.7416  | 23882 | 0.7215 | 7  | 7  | 9.5  | 1 | 9  | 23.70899963 |
| 423 | 8.1081  | 17300 | 0.7215 | 7  | 7  | 7.5  | 0 | 14 | 15.10000420 |

|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 424 | 5.3061  | 19772 | 0.7215 | 7  | 7  | 7.5  | 0 | 2  | 18.19997597 |
| 425 | 7.2709  | 35641 | 0.6215 | 7  | 7  | 5.0  | 1 | 21 | 22.64105606 |
| 426 | 8.1776  | 34220 | 0.5815 | 7  | 7  | 7.5  | 1 | 22 | 21.64007950 |
| 427 | 7.1006  | 30000 | 0.5815 | 12 | 16 | 11.0 | 1 | 14 | 23.99998474 |
| 428 | 6.5844  | 18000 | 0.6915 | 12 | 12 | 7.5  | 1 | 7  | 16.00001526 |
| 429 | 7.8529  | 21025 | 0.6615 | 14 | 12 | 7.5  | 1 | 2  | 21.02499962 |
| 430 | 11.9290 | 23600 | 0.6615 | 14 | 7  | 9.5  | 1 | 5  | 23.60000038 |
| 431 | 18.0000 | 22800 | 0.6615 | 12 | 12 | 7.5  | 0 | 12 | 22.79999924 |
| 432 | 10.0220 | 35910 | 0.5815 | 7  | 7  | 7.5  | 1 | 1  | 35.90999985 |
| 433 | 9.3333  | 21700 | 0.6615 | 7  | 7  | 5.0  | 1 | 12 | 21.70000076 |
| 434 | 6.0850  | 21823 | 0.7515 | 7  | 7  | 7.5  | 1 | 4  | 21.82299995 |
| 435 | 5.7054  | 31000 | 0.6615 | 10 | 7  | 11.0 | 1 | 9  | 31.00000000 |
| 436 | 9.1185  | 15300 | 0.7215 | 7  | 7  | 7.5  | 1 | 9  | 15.30000019 |
| 437 | 7.2072  | 12925 | 0.7215 | 9  | 3  | 7.5  | 1 | 6  | 12.92500019 |
| 438 | 5.3146  | 15830 | 0.7515 | 12 | 7  | 5.0  | 0 | 5  | 15.82999992 |
| 439 | 8.2828  | 30200 | 0.6915 | 12 | 12 | 7.5  | 1 | 5  | 30.20000076 |
| 440 | 7.0578  | 16600 | 0.7215 | 10 | 7  | 5.0  | 0 | 8  | 16.60000038 |
| 441 | 6.1659  | 11000 | 0.7515 | 7  | 7  | 7.5  | 1 | 2  | 11.00000000 |
| 442 | 2.7000  | 15000 | 0.7215 | 7  | 10 | 3.0  | 0 | 6  | 15.00000000 |
| 443 | 7.6628  | 20528 | 0.7215 | 7  | 7  | 11.0 | 0 | 0  | 20.52799988 |
| 444 | 1.8491  | 13126 | 0.7515 | 9  | 9  | 14.0 | 0 | 3  | 13.12600040 |
| 445 | 3.8462  | 15550 | 0.7215 | 7  | 14 | 7.5  | 1 | 7  | 15.55000019 |
| 446 | 9.0543  | 18010 | 0.7215 | 3  | 12 | 7.5  | 1 | 3  | 18.01000023 |
| 447 | 9.3750  | 18874 | 0.7215 | 10 | 10 | 14.0 | 0 | 10 | 18.87400055 |
| 448 | 8.3333  | 24800 | 0.6615 | 12 | 12 | 14.0 | 1 | 3  | 24.79999924 |
| 449 | 9.3733  | 17500 | 0.6915 | 12 | 17 | 5.0  | 1 | 2  | 17.50000000 |
| 450 | 4.4818  | 16150 | 0.7215 | 12 | 12 | 7.5  | 1 | 12 | 16.14999962 |
| 451 | 5.3476  | 15189 | 0.7215 | 7  | 3  | 3.0  | 0 | 15 | 15.18900013 |
| 452 | 3.2027  | 6000  | 0.7815 | 7  | 7  | 14.0 | 0 | 5  | 6.00000000  |
| 453 | 12.8010 | 37250 | 0.5515 | 10 | 12 | 9.5  | 1 | 4  | 37.25000000 |
| 454 | 6.9103  | 27760 | 0.6215 | 10 | 10 | 7.5  | 1 | 10 | 27.76000023 |
| 455 | 4.2293  | 9090  | 0.7715 | 7  | 7  | 3.0  | 0 | 1  | 9.09000015  |
| 456 | 4.4479  | 14500 | 0.7215 | 12 | 7  | 7.5  | 1 | 8  | 14.50000000 |
| 457 | 8.0523  | 19700 | 0.7215 | 7  | 7  | 14.0 | 1 | 20 | 19.70000076 |
| 458 | 7.5057  | 16788 | 0.6915 | 10 | 7  | 14.0 | 1 | 4  | 16.78800011 |
| 459 | 7.4747  | 18520 | 0.6915 | 10 | 10 | 11.0 | 1 | 7  | 18.52000046 |
| 460 | 6.3218  | 20950 | 0.6915 | 16 | 10 | 9.5  | 1 | 10 | 20.95000076 |
| 461 | 2.1354  | 7574  | 0.8015 | 7  | 3  | 11.0 | 0 | 3  | 7.57399988  |
| 462 | 4.2092  | 10027 | 0.7715 | 7  | 7  | 3.0  | 0 | 5  | 10.02700043 |
| 463 | 0.7595  | 5000  | 0.9415 | 12 | 12 | 7.5  | 0 | 10 | 5.00000000  |
| 464 | 4.8077  | 7040  | 0.7915 | 12 | 7  | 3.0  | 0 | 0  | 7.03999996  |
| 465 | 12.7880 | 40800 | 0.5215 | 10 | 7  | 7.5  | 1 | 3  | 40.79999924 |
| 466 | 7.1429  | 16050 | 0.7215 | 12 | 12 | 11.0 | 0 | 10 | 16.04999924 |

|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 467 | 15.1520 | 33100 | 0.5815 | 10 | 7  | 11.0 | 1 | 2  | 33.09999847 |
| 468 | 7.9082  | 33856 | 0.7215 | 12 | 12 | 9.5  | 1 | 10 | 33.85599899 |
| 469 | 6.9728  | 20500 | 0.6915 | 12 | 12 | 7.5  | 1 | 4  | 20.50000000 |
| 470 | 4.9181  | 28600 | 0.5815 | 7  | 7  | 5.0  | 1 | 0  | 28.60000038 |
| 471 | 8.3112  | 18750 | 0.6915 | 10 | 10 | 11.0 | 0 | 10 | 18.75000000 |
| 472 | 7.1429  | 20300 | 0.7215 | 7  | 7  | 9.5  | 1 | 5  | 20.29999924 |
| 473 | 5.6889  | 13420 | 0.7215 | 7  | 7  | 5.0  | 0 | 0  | 13.42000008 |
| 474 | 7.0833  | 18400 | 0.7215 | 3  | 3  | 5.0  | 0 | 0  | 18.39999962 |
| 475 | 5.6922  | 16682 | 0.7215 | 10 | 7  | 7.5  | 0 | 19 | 16.68199921 |
| 476 | 11.4000 | 32685 | 0.6215 | 7  | 7  | 7.5  | 1 | 2  | 32.68500137 |
| 477 | 1.4152  | 7050  | 0.8015 | 3  | 3  | 9.5  | 1 | 12 | 7.05000019  |
| 478 | 2.7507  | 10867 | 0.7815 | 12 | 7  | 9.5  | 1 | 5  | 10.86699963 |
| 479 | 6.6182  | 18220 | 0.7215 | 12 | 12 | 9.5  | 1 | 5  | 18.21999931 |
| 480 | 9.2725  | 26613 | 0.6915 | 7  | 7  | 7.5  | 0 | 5  | 26.61300087 |
| 481 | 12.2870 | 25000 | 0.6215 | 12 | 10 | 7.5  | 1 | 10 | 25.00000000 |
| 482 | 2.8549  | 15700 | 0.7515 | 7  | 7  | 7.5  | 1 | 0  | 15.69999981 |
| 483 | 7.9709  | 40250 | 0.5215 | 12 | 10 | 5.0  | 1 | 4  | 40.25000000 |
| 484 | 19.4440 | 73600 | 0.4415 | 12 | 16 | 11.0 | 0 | 3  | 73.59999847 |
| 485 | 1.4806  | 10592 | 0.7515 | 12 | 7  | 7.5  | 1 | 2  | 10.59200001 |
| 486 | 1.8918  | 8000  | 0.7515 | 7  | 7  | 3.0  | 0 | 1  | 8.00000000  |
| 487 | 6.9215  | 13400 | 0.7215 | 7  | 3  | 7.5  | 1 | 0  | 13.39999962 |
| 488 | 10.6920 | 23700 | 0.6615 | 12 | 12 | 14.0 | 1 | 1  | 23.70000076 |
| 489 | 9.9474  | 18900 | 0.6915 | 7  | 7  | 11.0 | 1 | 1  | 18.89999962 |
| 490 | 19.0000 | 48300 | 0.4615 | 7  | 12 | 9.5  | 1 | 6  | 48.29999924 |
| 491 | 7.4882  | 24470 | 0.6615 | 14 | 14 | 9.5  | 1 | 12 | 24.46999931 |
| 492 | 9.2590  | 28630 | 0.6215 | 16 | 7  | 7.5  | 1 | 6  | 28.62999916 |
| 493 | 11.3220 | 25320 | 0.6215 | 12 | 7  | 5.0  | 1 | 9  | 25.31999969 |
| 494 | 6.4470  | 13530 | 0.7515 | 12 | 10 | 7.5  | 1 | 14 | 13.52999973 |
| 495 | 6.5778  | 14800 | 0.7215 | 7  | 7  | 9.0  | 1 | 13 | 14.80000019 |
| 496 | 6.1000  | 17400 | 0.7515 | 12 | 7  | 7.5  | 0 | 8  | 17.39999962 |
| 497 | 4.2308  | 15980 | 0.7815 | 10 | 10 | 3.0  | 0 | 0  | 15.97999954 |
| 498 | 2.2170  | 16576 | 0.7215 | 7  | 7  | 7.5  | 0 | 1  | 16.57600021 |
| 499 | 6.5189  | 21850 | 0.6915 | 12 | 7  | 11.0 | 1 | 3  | 21.85000038 |
| 500 | 6.4923  | 14600 | 0.7215 | 7  | 7  | 14.0 | 1 | 13 | 14.60000038 |
| 501 | 11.3640 | 21600 | 0.6615 | 12 | 12 | 7.5  | 1 | 3  | 21.60000038 |
| 502 | 9.8765  | 24000 | 0.6615 | 12 | 12 | 7.5  | 1 | 8  | 24.00000000 |
| 503 | 7.6576  | 20883 | 0.6915 | 7  | 7  | 7.5  | 1 | 8  | 20.88299942 |
| 504 | 8.3017  | 19500 | 0.6915 | 7  | 7  | 14.0 | 0 | 18 | 19.50000000 |
| 505 | 14.1140 | 42800 | 0.6215 | 14 | 12 | 11.0 | 1 | 2  | 42.79999924 |
| 506 | 16.0000 | 41500 | 0.5215 | 7  | 7  | 7.5  | 0 | 3  | 41.50000000 |
| 507 | 11.2910 | 18965 | 0.6915 | 12 | 12 | 14.0 | 1 | 5  | 18.96500015 |
| 508 | 2.3395  | 16100 | 0.7215 | 12 | 10 | 9.5  | 1 | 2  | 16.10000038 |
| 509 | 7.7994  | 14700 | 0.7215 | 12 | 17 | 7.5  | 1 | 10 | 14.69999981 |

|     |         |       |        |    |    |      |   |    |              |
|-----|---------|-------|--------|----|----|------|---|----|--------------|
| 510 | 6.0000  | 18800 | 0.7215 | 7  | 7  | 7.5  | 1 | 30 | 18.799999924 |
| 511 | 6.6893  | 14750 | 0.7515 | 10 | 7  | 11.0 | 1 | 1  | 14.750000000 |
| 512 | 8.5366  | 21000 | 0.6915 | 12 | 7  | 14.0 | 1 | 5  | 21.000000000 |
| 513 | 13.8300 | 35400 | 0.6215 | 0  | 7  | 7.5  | 1 | 8  | 35.40000153  |
| 514 | 1.4800  | 10700 | 0.7515 | 7  | 7  | 7.5  | 0 | 0  | 10.699999981 |
| 515 | 8.5714  | 24500 | 0.6615 | 7  | 7  | 9.5  | 1 | 4  | 24.500000000 |
| 516 | 8.2299  | 17045 | 0.7215 | 7  | 7  | 9.5  | 1 | 2  | 17.045000008 |
| 517 | 8.3877  | 18800 | 0.6915 | 7  | 7  | 7.5  | 1 | 30 | 18.799999924 |
| 518 | 7.3651  | 14000 | 0.7215 | 10 | 7  | 14.0 | 1 | 25 | 14.000000000 |
| 519 | 3.4415  | 18214 | 0.7215 | 7  | 0  | 3.0  | 0 | 3  | 18.214000070 |
| 520 | 3.3537  | 20177 | 0.7515 | 7  | 7  | 7.5  | 1 | 20 | 20.177000005 |
| 521 | 2.9762  | 8300  | 0.7815 | 0  | 7  | 7.5  | 1 | 20 | 8.300000019  |
| 522 | 5.1810  | 14200 | 0.7515 | 14 | 9  | 7.5  | 1 | 0  | 14.199999981 |
| 523 | 10.2930 | 21768 | 0.6915 | 12 | 12 | 7.5  | 0 | 15 | 21.767999965 |
| 524 | 13.2430 | 29553 | 0.5815 | 10 | 7  | 14.0 | 1 | 10 | 29.552999950 |
| 525 | 3.6458  | 4350  | 0.9415 | 7  | 7  | 7.5  | 0 | 4  | 4.349999990  |
| 526 | 10.4070 | 24000 | 0.6615 | 7  | 7  | 11.0 | 1 | 3  | 24.000000000 |
| 527 | 8.2117  | 18300 | 0.6915 | 7  | 7  | 7.5  | 1 | 10 | 18.299999924 |
| 528 | 8.6735  | 17200 | 0.7215 | 7  | 3  | 7.5  | 1 | 9  | 17.200000076 |
| 529 | 8.3208  | 16476 | 0.6915 | 7  | 7  | 14.0 | 0 | 7  | 16.475999983 |
| 530 | 4.2870  | 13400 | 0.7515 | 0  | 0  | 14.0 | 0 | 12 | 13.399999962 |
| 531 | 10.5000 | 44988 | 0.5215 | 3  | 3  | 14.0 | 0 | 0  | 44.987999896 |
| 532 | 7.9787  | 18200 | 0.6915 | 12 | 12 | 9.0  | 1 | 16 | 18.200000076 |
| 533 | 11.8140 | 28000 | 0.6215 | 12 | 12 | 14.0 | 1 | 4  | 28.000000000 |
| 534 | 6.1111  | 11550 | 0.7515 | 12 | 12 | 7.5  | 1 | 7  | 11.550000019 |
| 535 | 12.5780 | 28450 | 0.6215 | 12 | 7  | 14.0 | 1 | 7  | 28.450000076 |
| 536 | 11.2440 | 15096 | 0.7515 | 7  | 10 | 7.5  | 1 | 14 | 15.095999972 |
| 537 | 2.7408  | 8009  | 0.7815 | 7  | 7  | 14.0 | 0 | 2  | 8.008999982  |
| 538 | 4.4444  | 10040 | 0.7515 | 0  | 0  | 3.0  | 1 | 20 | 10.039999996 |
| 539 | 5.8267  | 16700 | 0.7215 | 12 | 12 | 7.5  | 1 | 5  | 16.700000076 |
| 540 | 2.3478  | 8400  | 0.7815 | 12 | 7  | 3.0  | 0 | 10 | 8.399999962  |
| 541 | 4.4755  | 13000 | 0.7215 | 0  | 0  | 3.0  | 0 | 20 | 13.000000000 |
| 542 | 8.4986  | 17970 | 0.7215 | 7  | 7  | 7.5  | 1 | 10 | 17.969999931 |
| 543 | 7.1825  | 18450 | 0.7215 | 14 | 17 | 5.0  | 0 | 8  | 18.450000076 |
| 544 | 10.8700 | 31000 | 0.6615 | 12 | 7  | 14.0 | 1 | 11 | 31.000000000 |
| 545 | 7.1222  | 24135 | 0.7215 | 10 | 7  | 7.5  | 1 | 3  | 24.135000023 |
| 546 | 10.6592 | 31700 | 0.5815 | 12 | 12 | 7.5  | 0 | 6  | 31.700000076 |
| 547 | 3.2762  | 10190 | 0.7915 | 3  | 3  | 14.0 | 0 | 4  | 10.189999958 |
| 548 | 7.7521  | 21574 | 0.7215 | 10 | 10 | 14.0 | 0 | 4  | 21.573999940 |
| 549 | 11.9450 | 26680 | 0.6215 | 3  | 3  | 7.5  | 1 | 9  | 26.680000031 |
| 550 | 4.6154  | 17700 | 0.7515 | 7  | 9  | 11.0 | 1 | 10 | 17.700000076 |
| 551 | 13.0210 | 29400 | 0.6215 | 12 | 12 | 14.0 | 1 | 3  | 29.399999962 |
| 552 | 2.6667  | 22159 | 0.7515 | 7  | 7  | 7.5  | 0 | 2  | 22.159000040 |

|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 553 | 8.8333  | 35000 | 0.5815 | 12 | 12 | 11.0 | 0 | 2  | 35.00000000 |
| 554 | 2.3669  | 8630  | 0.7915 | 16 | 16 | 5.0  | 1 | 0  | 8.63000011  |
| 555 | 5.0000  | 17080 | 0.7515 | 7  | 0  | 14.0 | 1 | 8  | 17.07999992 |
| 556 | 7.4597  | 32500 | 0.7215 | 10 | 7  | 14.0 | 1 | 6  | 32.50000000 |
| 557 | 7.7519  | 16000 | 0.7215 | 7  | 7  | 11.0 | 1 | 15 | 16.00000000 |
| 558 | 5.4054  | 18850 | 0.7515 | 12 | 10 | 14.0 | 1 | 15 | 18.85000038 |
| 559 | 6.1239  | 17500 | 0.6915 | 9  | 9  | 9.5  | 1 | 9  | 17.50000000 |
| 560 | 8.3369  | 19392 | 0.6915 | 7  | 12 | 14.0 | 0 | 8  | 19.39200020 |
| 561 | 7.1277  | 14450 | 0.7215 | 7  | 10 | 7.5  | 1 | 18 | 14.44999981 |
| 562 | 6.1204  | 21800 | 0.6915 | 0  | 0  | 7.5  | 1 | 3  | 21.79999924 |
| 563 | 3.1111  | 7700  | 0.7515 | 7  | 7  | 14.0 | 1 | 10 | 7.69999981  |
| 564 | 12.1610 | 31800 | 0.5815 | 7  | 7  | 11.0 | 0 | 6  | 31.79999924 |
| 565 | 5.3846  | 17258 | 0.7515 | 7  | 7  | 9.5  | 1 | 20 | 17.25799942 |
| 566 | 3.9838  | 13399 | 0.7515 | 10 | 12 | 9.5  | 0 | 8  | 13.39900017 |
| 567 | 7.4697  | 16073 | 0.7215 | 12 | 16 | 11.0 | 0 | 3  | 16.07299995 |
| 568 | 11.4110 | 23260 | 0.6615 | 7  | 7  | 7.5  | 1 | 4  | 23.26000023 |
| 569 | 12.9360 | 37300 | 0.5515 | 12 | 12 | 14.0 | 1 | 13 | 37.29999924 |
| 570 | 5.6122  | 11000 | 0.7515 | 12 | 7  | 11.0 | 1 | 4  | 11.00000000 |
| 571 | 6.8099  | 13075 | 0.7515 | 7  | 7  | 14.0 | 1 | 17 | 13.07499981 |
| 572 | 8.5066  | 13700 | 0.7215 | 7  | 7  | 9.5  | 1 | 4  | 13.69999981 |
| 573 | 5.5080  | 25100 | 0.6615 | 7  | 10 | 5.0  | 0 | 0  | 25.10000038 |
| 574 | 7.2285  | 18600 | 0.6915 | 12 | 16 | 5.0  | 1 | 15 | 18.60000038 |
| 575 | 9.4545  | 29000 | 0.6215 | 16 | 16 | 9.5  | 0 | 11 | 29.00000000 |
| 576 | 8.9835  | 19237 | 0.6915 | 7  | 7  | 9.5  | 1 | 23 | 19.23699951 |
| 577 | 5.9846  | 19855 | 0.7215 | 12 | 14 | 7.5  | 1 | 1  | 19.85499954 |
| 578 | 3.9629  | 9450  | 0.7515 | 12 | 7  | 9.5  | 0 | 5  | 9.44999981  |
| 579 | 7.0575  | 30000 | 0.5815 | 7  | 7  | 7.5  | 0 | 1  | 30.00000000 |
| 580 | 7.1565  | 15000 | 0.7215 | 10 | 10 | 14.0 | 1 | 5  | 15.00000000 |
| 581 | 4.0145  | 24701 | 0.6615 | 12 | 12 | 9.5  | 1 | 3  | 24.70100021 |
| 582 | 3.8829  | 15900 | 0.7215 | 10 | 14 | 11.0 | 0 | 3  | 15.89999962 |
| 583 | 7.9787  | 16240 | 0.7215 | 7  | 7  | 11.0 | 0 | 19 | 16.23999977 |
| 584 | 5.0366  | 21100 | 0.7515 | 12 | 12 | 9.5  | 1 | 20 | 21.10000038 |
| 585 | 7.0769  | 23000 | 0.6615 | 12 | 12 | 7.5  | 1 | 5  | 23.00000000 |
| 586 | 3.6184  | 6340  | 0.7715 | 7  | 7  | 14.0 | 0 | 0  | 6.34000015  |
| 587 | 13.4660 | 42250 | 0.4915 | 10 | 10 | 5.0  | 1 | 3  | 42.25000000 |
| 588 | 14.5310 | 14694 | 0.7215 | 12 | 10 | 11.0 | 1 | 3  | 14.69400024 |
| 589 | 6.8000  | 21417 | 0.7215 | 12 | 12 | 9.5  | 1 | 7  | 21.41699982 |
| 590 | 6.6667  | 20200 | 0.6615 | 7  | 12 | 7.5  | 1 | 7  | 20.20000076 |
| 591 | 5.9172  | 12090 | 0.7215 | 7  | 7  | 9.5  | 1 | 1  | 12.09000015 |
| 592 | 10.2400 | 24760 | 0.6615 | 12 | 7  | 5.0  | 1 | 13 | 24.76000023 |
| 593 | 8.1566  | 23000 | 0.6915 | 7  | 3  | 3.0  | 0 | 0  | 23.00000000 |
| 594 | 6.6775  | 19365 | 0.7215 | 3  | 3  | 11.0 | 1 | 0  | 19.36499977 |
| 595 | 0.9615  | 5550  | 0.9415 | 7  | 7  | 3.0  | 0 | 12 | 5.55000019  |

|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 596 | 16.9070 | 68035 | 0.4415 | 7  | 3  | 7.5  | 1 | 0  | 68.03500366 |
| 597 | 13.5700 | 29300 | 0.6215 | 10 | 14 | 7.5  | 1 | 5  | 29.29999924 |
| 598 | 8.9329  | 18500 | 0.6915 | 7  | 7  | 7.5  | 1 | 45 | 18.50000000 |
| 599 | 4.7372  | 22582 | 0.7215 | 17 | 7  | 11.0 | 0 | 10 | 22.58200073 |
| 600 | 8.5106  | 21500 | 0.7215 | 7  | 7  | 7.5  | 1 | 2  | 21.50000000 |
| 601 | 5.2511  | 28070 | 0.7515 | 7  | 7  | 7.5  | 0 | 3  | 28.06999969 |
| 602 | 21.7860 | 50300 | 0.4415 | 12 | 12 | 14.0 | 1 | 1  | 50.29999924 |
| 603 | 7.9125  | 23500 | 0.6615 | 12 | 12 | 14.0 | 1 | 5  | 23.50000000 |
| 604 | 7.1083  | 15500 | 0.7515 | 7  | 9  | 14.0 | 0 | 10 | 15.50000000 |
| 605 | 5.0434  | 13440 | 0.7715 | 7  | 0  | 5.0  | 0 | 4  | 13.43999958 |
| 606 | 2.2442  | 8100  | 0.7815 | 12 | 12 | 11.0 | 0 | 7  | 8.10000038  |
| 607 | 8.5069  | 9800  | 0.7515 | 7  | 12 | 9.5  | 1 | 9  | 9.80000019  |
| 608 | 7.5758  | 20300 | 0.6915 | 7  | 12 | 5.0  | 1 | 5  | 20.29999924 |
| 609 | 5.8824  | 15000 | 0.7515 | 7  | 7  | 14.0 | 1 | 4  | 15.00000000 |
| 610 | 40.4410 | 56100 | 0.4415 | 9  | 9  | 5.0  | 1 | 11 | 56.09999847 |
| 611 | 6.2339  | 22846 | 0.7215 | 12 | 7  | 5.0  | 1 | 9  | 22.84600067 |
| 612 | 9.2971  | 22225 | 0.6915 | 7  | 12 | 5.0  | 1 | 4  | 22.22500038 |
| 613 | 0.7038  | 17635 | 0.9415 | 12 | 7  | 7.5  | 1 | 2  | 17.63500023 |
| 614 | 2.5425  | 18500 | 0.6915 | 3  | 12 | 7.5  | 0 | 23 | 18.50000000 |
| 615 | 5.0833  | 13390 | 0.7515 | 12 | 12 | 11.0 | 0 | 3  | 13.39000034 |
| 616 | 7.6843  | 15150 | 0.7215 | 7  | 7  | 7.5  | 1 | 15 | 15.14999962 |
| 617 | 4.0625  | 16200 | 0.7815 | 7  | 3  | 7.5  | 0 | 8  | 16.20000076 |
| 618 | 6.5106  | 33920 | 0.6615 | 12 | 12 | 14.0 | 1 | 3  | 33.91999817 |
| 619 | 2.9510  | 14000 | 0.7215 | 7  | 12 | 7.5  | 0 | 25 | 14.00000000 |
| 620 | 5.6738  | 16736 | 0.7515 | 12 | 3  | 11.0 | 1 | 2  | 16.73600006 |
| 621 | 12.7660 | 30650 | 0.6615 | 12 | 12 | 11.0 | 1 | 0  | 30.64999962 |
| 622 | 6.0000  | 12400 | 0.7515 | 7  | 7  | 11.0 | 0 | 19 | 12.39999962 |
| 623 | 9.2955  | 19022 | 0.6915 | 7  | 10 | 9.5  | 1 | 3  | 19.02199936 |
| 624 | 5.1324  | 11203 | 0.7515 | 7  | 7  | 5.0  | 0 | 7  | 11.20300007 |
| 625 | 9.0659  | 19876 | 0.6915 | 7  | 14 | 7.5  | 1 | 1  | 19.87599945 |
| 626 | 11.9310 | 57000 | 0.4415 | 7  | 12 | 14.0 | 1 | 9  | 57.00000000 |
| 627 | 6.7164  | 18290 | 0.6915 | 10 | 10 | 11.0 | 1 | 3  | 18.29000092 |
| 628 | 4.5851  | 20220 | 0.6915 | 14 | 12 | 11.0 | 1 | 8  | 20.21999931 |
| 629 | 9.2567  | 22150 | 0.6915 | 7  | 7  | 14.0 | 1 | 0  | 22.14999962 |
| 630 | 8.5656  | 30623 | 0.6215 | 10 | 10 | 7.5  | 1 | 5  | 30.62299919 |
| 631 | 6.7407  | 9380  | 0.7515 | 3  | 3  | 14.0 | 1 | 20 | 9.38000011  |
| 632 | 9.8788  | 22000 | 0.6915 | 7  | 7  | 5.0  | 1 | 3  | 22.00000000 |
| 633 | 9.3750  | 23675 | 0.6615 | 12 | 10 | 7.5  | 1 | 12 | 23.67499924 |
| 634 | 6.2770  | 33671 | 0.7215 | 7  | 7  | 14.0 | 1 | 5  | 33.67100143 |
| 635 | 6.4241  | 12367 | 0.7515 | 7  | 7  | 7.5  | 0 | 1  | 12.36699963 |
| 636 | 8.3718  | 21950 | 0.6615 | 7  | 7  | 5.0  | 0 | 0  | 21.95000076 |
| 637 | 12.2200 | 32000 | 0.5815 | 7  | 7  | 9.5  | 1 | 7  | 32.00000000 |
| 638 | 3.5612  | 22610 | 0.7215 | 10 | 10 | 9.5  | 1 | 13 | 22.61000061 |

|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 639 | 8.8670  | 12092 | 0.7515 | 7  | 7  | 3.0  | 0 | 3  | 12.09200001 |
| 640 | 1.8515  | 3777  | 0.9415 | 7  | 7  | 11.0 | 0 | 0  | 3.77699995  |
| 641 | 8.0769  | 36000 | 0.5515 | 16 | 14 | 3.0  | 0 | 2  | 36.00000000 |
| 642 | 8.9796  | 26900 | 0.6615 | 12 | 16 | 7.5  | 0 | 0  | 26.89999962 |
| 643 | 6.6618  | 32242 | 0.6615 | 7  | 7  | 11.0 | 1 | 2  | 32.24200058 |
| 644 | 11.1070 | 35020 | 0.5815 | 16 | 17 | 5.0  | 1 | 1  | 35.02000046 |
| 645 | 14.0770 | 37600 | 0.5515 | 7  | 7  | 9.0  | 1 | 10 | 37.59999847 |
| 646 | 0.4121  | 1500  | 0.9415 | 7  | 7  | 7.5  | 1 | 10 | 1.50000000  |
| 647 | 23.8100 | 96000 | 0.4415 | 12 | 12 | 5.0  | 1 | 1  | 96.00000000 |
| 648 | 9.5745  | 18150 | 0.6915 | 7  | 7  | 11.0 | 0 | 3  | 18.14999962 |
| 649 | 1.9286  | 15500 | 0.7215 | 7  | 7  | 3.0  | 0 | 32 | 15.50000000 |
| 650 | 2.5783  | 14000 | 0.7215 | 7  | 7  | 3.0  | 0 | 0  | 14.00000000 |
| 651 | 7.2274  | 14756 | 0.7215 | 7  | 7  | 7.5  | 1 | 7  | 14.75599957 |
| 652 | 8.8000  | 22000 | 0.6615 | 12 | 10 | 5.0  | 1 | 5  | 22.00000000 |
| 653 | 7.7500  | 24466 | 0.6615 | 7  | 7  | 11.0 | 1 | 2  | 24.46599960 |
| 654 | 14.6880 | 24400 | 0.6615 | 12 | 12 | 7.5  | 1 | 5  | 24.39999962 |
| 655 | 10.4870 | 24000 | 0.6615 | 7  | 7  | 9.5  | 1 | 3  | 24.00000000 |
| 656 | 4.0253  | 15500 | 0.7215 | 12 | 9  | 11.0 | 0 | 25 | 15.50000000 |
| 657 | 11.7650 | 30800 | 0.6215 | 14 | 12 | 7.5  | 0 | 0  | 30.79999924 |
| 658 | 9.5238  | 10660 | 0.7515 | 7  | 7  | 14.0 | 1 | 3  | 10.65999985 |
| 659 | 6.9079  | 13350 | 0.7215 | 7  | 7  | 11.0 | 0 | 10 | 13.35000038 |
| 660 | 5.1510  | 10090 | 0.7515 | 12 | 3  | 11.0 | 0 | 10 | 10.09000015 |
| 661 | 20.4960 | 55600 | 0.4415 | 16 | 14 | 14.0 | 1 | 7  | 55.59999847 |
| 662 | 13.5550 | 25700 | 0.6615 | 12 | 12 | 9.5  | 1 | 5  | 25.70000076 |
| 663 | 14.7960 | 29000 | 0.5815 | 7  | 3  | 5.0  | 1 | 15 | 29.00000000 |
| 664 | 1.6905  | 7286  | 0.7815 | 10 | 7  | 3.0  | 0 | 1  | 7.28599977  |
| 665 | 7.2296  | 37752 | 0.5215 | 7  | 7  | 3.0  | 0 | 5  | 37.75199890 |
| 666 | 4.1152  | 13072 | 0.7515 | 3  | 3  | 14.0 | 0 | 9  | 13.07199955 |
| 667 | 2.9990  | 7044  | 0.7715 | 3  | 3  | 14.0 | 0 | 18 | 7.04400015  |
| 668 | 8.0492  | 18200 | 0.6915 | 7  | 7  | 14.0 | 1 | 1  | 18.20000076 |
| 669 | 8.5770  | 27000 | 0.6215 | 12 | 7  | 3.0  | 0 | 0  | 27.00000000 |
| 670 | 9.3235  | 30300 | 0.5815 | 10 | 12 | 3.0  | 0 | 6  | 30.29999924 |
| 671 | 4.7059  | 12000 | 0.7515 | 3  | 7  | 14.0 | 0 | 1  | 12.00000000 |
| 672 | 9.1346  | 31500 | 0.6615 | 16 | 17 | 3.0  | 0 | 2  | 31.50000000 |
| 673 | 7.7670  | 27092 | 0.7215 | 10 | 10 | 5.0  | 1 | 15 | 27.09199905 |
| 674 | 4.1269  | 20968 | 0.7515 | 7  | 7  | 3.0  | 0 | 25 | 20.96800041 |
| 675 | 10.0000 | 27000 | 0.6615 | 17 | 7  | 14.0 | 1 | 1  | 27.00000000 |
| 676 | 4.0727  | 11225 | 0.7515 | 7  | 10 | 7.5  | 1 | 0  | 11.22500038 |
| 677 | 7.8529  | 37700 | 0.5815 | 3  | 3  | 7.5  | 0 | 0  | 37.70000076 |
| 678 | 7.8168  | 28200 | 0.6615 | 12 | 16 | 7.5  | 1 | 0  | 28.20000076 |
| 679 | 9.1667  | 34000 | 0.6615 | 7  | 12 | 5.0  | 0 | 8  | 34.00000000 |
| 680 | 29.6440 | 63200 | 0.4415 | 12 | 7  | 9.5  | 1 | 22 | 63.20000076 |
| 681 | 4.0761  | 7500  | 0.7915 | 3  | 3  | 7.5  | 1 | 5  | 7.50000000  |

|     |         |       |        |    |    |      |   |    |              |
|-----|---------|-------|--------|----|----|------|---|----|--------------|
| 682 | 8.3620  | 17410 | 0.7215 | 10 | 10 | 9.5  | 1 | 10 | 17.409999985 |
| 683 | 12.0620 | 51000 | 0.4415 | 16 | 17 | 9.0  | 1 | 1  | 51.00000000  |
| 684 | 2.3251  | 12916 | 0.7515 | 10 | 7  | 3.0  | 0 | 1  | 12.916000037 |
| 685 | 10.0100 | 21900 | 0.6615 | 7  | 7  | 5.0  | 1 | 6  | 21.899999962 |
| 686 | 5.2734  | 17640 | 0.7515 | 7  | 7  | 5.0  | 0 | 4  | 17.639999939 |
| 687 | 10.4170 | 20000 | 0.6915 | 14 | 16 | 14.0 | 0 | 6  | 20.00000000  |
| 688 | 7.5000  | 15000 | 0.7215 | 7  | 7  | 14.0 | 1 | 0  | 15.00000000  |
| 689 | 6.3521  | 14060 | 0.7215 | 10 | 12 | 5.0  | 0 | 1  | 14.060000042 |
| 690 | 3.8071  | 15825 | 0.7215 | 7  | 14 | 9.5  | 0 | 3  | 15.824999981 |
| 691 | 9.9099  | 16510 | 0.7215 | 3  | 16 | 9.5  | 1 | 15 | 16.510000023 |
| 692 | 2.6701  | 13000 | 0.7215 | 12 | 12 | 7.5  | 0 | 33 | 13.00000000  |
| 693 | 4.3956  | 10000 | 0.7515 | 7  | 7  | 5.0  | 1 | 2  | 10.00000000  |
| 694 | 7.9710  | 22000 | 0.6615 | 12 | 12 | 7.5  | 1 | 1  | 22.00000000  |
| 695 | 15.4290 | 29800 | 0.5815 | 7  | 7  | 7.5  | 1 | 10 | 29.799999924 |
| 696 | 1.9854  | 15000 | 0.7215 | 7  | 7  | 5.0  | 1 | 0  | 15.00000000  |
| 697 | 7.2562  | 22300 | 0.7215 | 10 | 14 | 9.5  | 1 | 14 | 22.299999924 |
| 698 | 7.0352  | 14550 | 0.7215 | 3  | 16 | 7.5  | 1 | 15 | 14.550000019 |
| 699 | 8.1347  | 19730 | 0.6915 | 14 | 12 | 7.5  | 1 | 15 | 19.729999954 |
| 700 | 11.9810 | 35000 | 0.5515 | 12 | 12 | 7.5  | 1 | 10 | 35.00000000  |
| 701 | 5.9922  | 21014 | 0.6615 | 7  | 3  | 7.5  | 1 | 6  | 21.013999994 |
| 702 | 4.1458  | 10876 | 0.7515 | 14 | 7  | 7.5  | 0 | 18 | 10.876000040 |
| 703 | 8.5102  | 27850 | 0.6215 | 12 | 10 | 7.5  | 0 | 15 | 27.850000038 |
| 704 | 2.9631  | 9560  | 0.7515 | 0  | 3  | 3.0  | 0 | 30 | 9.560000042  |
| 705 | 8.8149  | 30300 | 0.6215 | 7  | 7  | 7.5  | 0 | 15 | 30.299999924 |
| 706 | 2.4955  | 7720  | 0.7815 | 7  | 7  | 7.5  | 0 | 10 | 7.719999979  |
| 707 | 4.8843  | 10550 | 0.7515 | 10 | 7  | 7.5  | 1 | 0  | 10.550000019 |
| 708 | 10.2000 | 24106 | 0.6615 | 12 | 7  | 9.5  | 1 | 0  | 24.106000090 |
| 709 | 10.0000 | 22995 | 0.6615 | 12 | 14 | 9.5  | 1 | 4  | 22.995000084 |
| 710 | 5.3571  | 6000  | 0.8015 | 12 | 12 | 9.5  | 1 | 0  | 6.00000000   |
| 711 | 9.7959  | 24350 | 0.6615 | 14 | 14 | 9.5  | 1 | 3  | 24.350000038 |
| 712 | 1.3741  | 7608  | 0.7715 | 7  | 7  | 7.5  | 0 | 20 | 7.607999980  |
| 713 | 3.4630  | 28200 | 0.7215 | 7  | 7  | 3.0  | 0 | 3  | 28.200000076 |
| 714 | 5.0408  | 16150 | 0.7215 | 3  | 7  | 3.0  | 0 | 1  | 16.149999962 |
| 715 | 16.6670 | 51200 | 0.4415 | 7  | 10 | 7.5  | 1 | 5  | 51.200000076 |
| 716 | 4.3294  | 12646 | 0.7515 | 7  | 7  | 5.0  | 1 | 7  | 12.645999991 |
| 717 | 10.1930 | 19000 | 0.6915 | 7  | 7  | 11.0 | 1 | 6  | 19.00000000  |
| 718 | 7.5833  | 19000 | 0.7215 | 7  | 7  | 7.5  | 1 | 2  | 19.00000000  |
| 719 | 4.1204  | 14400 | 0.7515 | 3  | 3  | 7.5  | 0 | 0  | 14.399999962 |
| 720 | 4.8077  | 7232  | 0.9415 | 3  | 7  | 11.0 | 1 | 10 | 7.231999987  |
| 721 | 3.1531  | 21943 | 0.7515 | 7  | 10 | 9.5  | 1 | 6  | 21.943000079 |
| 722 | 19.0000 | 47500 | 0.4615 | 7  | 10 | 7.5  | 1 | 4  | 47.50000000  |
| 723 | 6.0535  | 28900 | 0.6215 | 12 | 7  | 7.5  | 1 | 8  | 28.899999962 |
| 724 | 3.7875  | 12400 | 0.7715 | 7  | 7  | 7.5  | 0 | 18 | 12.399999962 |



|     |         |       |        |    |    |      |   |    |             |
|-----|---------|-------|--------|----|----|------|---|----|-------------|
| 725 | 2.9287  | 6531  | 0.7815 | 0  | 0  | 7.5  | 0 | 7  | 6.53100014  |
| 726 | 9.2972  | 22422 | 0.6915 | 3  | 7  | 11.0 | 1 | 15 | 22.42200089 |
| 727 | 9.3827  | 22200 | 0.6615 | 7  | 7  | 11.0 | 1 | 7  | 22.20000076 |
| 728 | 26.5310 | 77000 | 0.4415 | 7  | 14 | 14.0 | 1 | 8  | 77.00000000 |
| 729 | 40.5090 | 88000 | 0.4415 | 10 | 10 | 14.0 | 1 | 8  | 88.00000000 |
| 730 | 15.1600 | 26040 | 0.6215 | 12 | 10 | 11.0 | 0 | 3  | 26.04000092 |
| 731 | 18.9640 | 63500 | 0.4415 | 7  | 7  | 7.5  | 1 | 10 | 63.50000000 |
| 732 | 5.4152  | 12100 | 0.7515 | 10 | 10 | 7.5  | 0 | 9  | 12.10000038 |
| 733 | 1.9988  | 17505 | 0.7515 | 12 | 7  | 7.5  | 1 | 24 | 17.50499916 |
| 734 | 8.0000  | 18000 | 0.6915 | 10 | 7  | 7.5  | 0 | 12 | 18.00000000 |
| 735 | 11.1530 | 28069 | 0.6615 | 12 | 12 | 11.0 | 1 | 2  | 28.06900024 |
| 736 | 5.9524  | 14000 | 0.7515 | 12 | 14 | 14.0 | 1 | 6  | 14.00000000 |
| 737 | 2.1194  | 8117  | 0.7515 | 10 | 3  | 7.5  | 1 | 18 | 8.11699963  |
| 738 | 3.8384  | 11895 | 0.7715 | 7  | 7  | 5.0  | 1 | 17 | 11.89500046 |
| 739 | 17.3610 | 45250 | 0.4915 | 16 | 16 | 5.0  | 1 | 7  | 45.25000000 |
| 740 | 8.0092  | 31106 | 0.6915 | 7  | 10 | 9.5  | 1 | 6  | 31.10600090 |
| 741 | 3.0000  | 4000  | 0.8015 | 12 | 7  | 9.5  | 1 | 10 | 4.00000000  |
| 742 | 10.5890 | 40500 | 0.5815 | 7  | 7  | 7.5  | 1 | 5  | 40.50000000 |
| 743 | 10.9130 | 21620 | 0.7215 | 10 | 7  | 7.5  | 1 | 7  | 21.62000084 |
| 744 | 5.6033  | 23426 | 0.7215 | 0  | 0  | 7.5  | 1 | 11 | 23.42600060 |
| 745 | 7.9365  | 26000 | 0.6615 | 3  | 3  | 11.0 | 1 | 14 | 26.00000000 |
| 746 | 2.9476  | 7840  | 0.9415 | 7  | 0  | 9.5  | 1 | 5  | 7.84000015  |
| 747 | 2.0562  | 6800  | 0.7915 | 7  | 3  | 7.5  | 0 | 2  | 6.80000019  |
| 748 | 1.3013  | 5330  | 0.7915 | 7  | 12 | 14.0 | 0 | 4  | 5.32999992  |
| 749 | 9.2715  | 28200 | 0.6215 | 10 | 10 | 9.5  | 1 | 5  | 28.20000076 |
| 750 | 4.8638  | 10000 | 0.7715 | 12 | 12 | 7.5  | 0 | 14 | 10.00000000 |
| 751 | 1.0898  | 9952  | 0.7515 | 10 | 3  | 7.5  | 0 | 4  | 9.95199966  |
| 752 | 12.4400 | 24984 | 0.6215 | 12 | 12 | 14.0 | 1 | 15 | 24.98399925 |
| 753 | 6.0897  | 28363 | 0.6915 | 7  | 7  | 11.0 | 1 | 12 | 28.36300087 |

|    | lwage      | expersq | loghours | d_hours | sample        |
|----|------------|---------|----------|---------|---------------|
| 1  | 1.21015370 | 196     | 7.383989 | 1       | prueba        |
| 2  | 0.32851210 | 25      | 7.412160 | 1       | entrenamiento |
| 3  | 1.51413774 | 225     | 7.590852 | 1       | prueba        |
| 4  | 0.09212332 | 36      | 6.122493 | 1       | prueba        |
| 5  | 1.52427220 | 49      | 7.357556 | 1       | entrenamiento |
| 6  | 1.55648005 | 1089    | 7.616776 | 1       | entrenamiento |
| 7  | 2.12025952 | 121     | 7.272398 | 1       | prueba        |
| 8  | 2.05963421 | 1225    | 6.927558 | 1       | prueba        |
| 9  | 0.75433636 | 576     | 7.284821 | 1       | prueba        |
| 10 | 1.54489934 | 441     | 7.377759 | 1       | entrenamiento |
| 11 | 1.40192163 | 225     | 7.585281 | 1       | prueba        |
| 12 | 1.52427220 | 196     | 7.580700 | 1       | prueba        |
| 13 | 0.73395324 | 0       | 5.480639 | 1       | prueba        |

|    |            |      |          |   |               |
|----|------------|------|----------|---|---------------|
| 14 | 0.81836909 | 196  | 6.904751 | 1 | prueba        |
| 15 | 1.30283117 | 36   | 7.521859 | 1 | entrenamiento |
| 16 | 0.29802838 | 81   | 7.109879 | 1 | prueba        |
| 17 | 1.16760957 | 400  | 7.244228 | 1 | prueba        |
| 18 | 1.64383936 | 36   | 6.461468 | 1 | entrenamiento |
| 19 | 0.69314718 | 529  | 7.600902 | 1 | entrenamiento |
| 20 | 2.02193165 | 81   | 7.188413 | 1 | entrenamiento |
| 21 | 1.25424755 | 25   | 7.703008 | 1 | entrenamiento |
| 22 | 1.27295768 | 121  | 7.426549 | 1 | prueba        |
| 23 | 1.17865503 | 324  | 7.377759 | 1 | prueba        |
| 24 | 1.17865503 | 225  | 6.684612 | 1 | entrenamiento |
| 25 | 0.76755869 | 16   | 7.578145 | 1 | prueba        |
| 26 | 1.33181179 | 441  | 6.492240 | 1 | entrenamiento |
| 27 | 1.38629436 | 961  | 6.263398 | 1 | entrenamiento |
| 28 | 1.55326962 | 81   | 7.551712 | 1 | prueba        |
| 29 | 1.98181486 | 49   | 7.323831 | 1 | prueba        |
| 30 | 1.76936042 | 49   | 5.846439 | 1 | entrenamiento |
| 31 | 0.43080789 | 1024 | 6.946976 | 1 | prueba        |
| 32 | 0.89975482 | 121  | 6.595781 | 1 | entrenamiento |
| 33 | 1.76662970 | 256  | 7.539027 | 1 | prueba        |
| 34 | 1.27295768 | 196  | 7.426549 | 1 | prueba        |
| 35 | 1.33678889 | 729  | 7.640604 | 1 | prueba        |
| 36 | 0.90170485 | 0    | 6.536692 | 1 | prueba        |
| 37 | 0.86512369 | 289  | 8.345218 | 1 | prueba        |
| 38 | 1.51184714 | 784  | 7.698483 | 1 | prueba        |
| 39 | 1.72602916 | 576  | 7.576610 | 1 | entrenamiento |
| 40 | 2.68314242 | 121  | 7.171657 | 1 | entrenamiento |
| 41 | 0.98529428 | 1    | 4.718499 | 1 | entrenamiento |
| 42 | 1.36593854 | 196  | 6.794587 | 1 | entrenamiento |
| 43 | 0.94503367 | 36   | 6.368187 | 1 | prueba        |
| 44 | 1.51237619 | 100  | 6.173786 | 1 | entrenamiento |
| 45 | 0.69314718 | 36   | 7.549609 | 1 | prueba        |
| 46 | 1.24478841 | 16   | 6.356108 | 1 | prueba        |
| 47 | 0.70116490 | 100  | 7.628518 | 1 | prueba        |
| 48 | 1.51986325 | 484  | 7.592870 | 1 | entrenamiento |
| 49 | 0.82096857 | 256  | 7.878534 | 1 | entrenamiento |
| 50 | 0.96983153 | 36   | 5.480639 | 1 | prueba        |
| 51 | 0.82850820 | 144  | 7.067320 | 1 | prueba        |
| 52 | 0.09430964 | 1024 | 8.199739 | 1 | entrenamiento |
| 53 | 0.16254389 | 225  | 5.828946 | 1 | entrenamiento |
| 54 | 0.47000363 | 289  | 6.214608 | 1 | entrenamiento |
| 55 | 0.62924844 | 1156 | 7.377134 | 1 | entrenamiento |
| 56 | 1.39716017 | 81   | 7.512071 | 1 | entrenamiento |

|    |             |      |          |   |               |
|----|-------------|------|----------|---|---------------|
| 57 | 2.26544380  | 1369 | 7.560080 | 1 | entrenamiento |
| 58 | 2.08454108  | 100  | 7.626570 | 1 | prueba        |
| 59 | 1.52583885  | 1225 | 7.745868 | 1 | entrenamiento |
| 60 | 0.76216006  | 36   | 5.278115 | 1 | entrenamiento |
| 61 | 1.48160458  | 361  | 7.824046 | 1 | prueba        |
| 62 | 1.26282644  | 100  | 7.590852 | 1 | entrenamiento |
| 63 | 0.99967557  | 121  | 7.517521 | 1 | entrenamiento |
| 64 | 1.83258152  | 225  | 5.768321 | 1 | entrenamiento |
| 65 | 2.47930765  | 144  | 6.037871 | 1 | prueba        |
| 66 | 1.27901530  | 144  | 7.539027 | 1 | prueba        |
| 67 | 1.93793559  | 196  | 4.276666 | 1 | entrenamiento |
| 68 | 1.07045281  | 121  | 4.787492 | 1 | entrenamiento |
| 69 | 1.12392259  | 81   | 7.541683 | 1 | entrenamiento |
| 70 | 1.32175589  | 576  | 5.480639 | 1 | entrenamiento |
| 71 | 1.74499977  | 144  | 7.455298 | 1 | entrenamiento |
| 72 | 1.30174363  | 169  | 7.522941 | 1 | prueba        |
| 73 | 1.64186645  | 841  | 7.617268 | 1 | prueba        |
| 74 | 2.10702014  | 121  | 6.410175 | 1 | prueba        |
| 75 | 1.46706760  | 169  | 7.050123 | 1 | entrenamiento |
| 76 | 1.60581136  | 361  | 7.699842 | 1 | entrenamiento |
| 77 | -1.02973938 | 4    | 5.529429 | 1 | prueba        |
| 78 | 1.08768618  | 576  | 5.820083 | 1 | prueba        |
| 79 | 0.00000000  | 81   | 4.499810 | 1 | entrenamiento |
| 80 | 0.93820870  | 36   | 7.068172 | 1 | prueba        |
| 81 | -0.15059038 | 484  | 5.918894 | 1 | prueba        |
| 82 | 0.00000000  | 900  | 3.401197 | 1 | entrenamiento |
| 83 | 1.07367051  | 100  | 7.495542 | 1 | entrenamiento |
| 84 | 1.26584840  | 36   | 5.641907 | 1 | entrenamiento |
| 85 | 0.48636898  | 841  | 6.579251 | 1 | prueba        |
| 86 | 2.12025952  | 841  | 7.272398 | 1 | prueba        |
| 87 | 1.12985253  | 1296 | 7.649693 | 1 | entrenamiento |
| 88 | 0.99325180  | 361  | 6.907755 | 1 | prueba        |
| 89 | 1.65862799  | 64   | 6.858565 | 1 | prueba        |
| 90 | 0.34741220  | 169  | 7.253470 | 1 | entrenamiento |
| 91 | 1.56832421  | 256  | 7.649693 | 1 | entrenamiento |
| 92 | 0.51084560  | 121  | 4.787492 | 1 | entrenamiento |
| 93 | 0.11484543  | 225  | 8.006368 | 1 | entrenamiento |
| 94 | -0.69314718 | 36   | 6.907755 | 1 | prueba        |
| 95 | -0.33645228 | 169  | 5.817111 | 1 | prueba        |
| 96 | 1.02822554  | 484  | 7.103322 | 1 | entrenamiento |
| 97 | 1.58068860  | 576  | 6.895683 | 1 | entrenamiento |
| 98 | 0.55589461  | 4    | 7.855932 | 1 | prueba        |
| 99 | 0.90142071  | 36   | 7.615791 | 1 | prueba        |

|     |             |      |          |   |               |
|-----|-------------|------|----------|---|---------------|
| 100 | 0.88430458  | 4    | 6.023448 | 1 | prueba        |
| 101 | 0.42820460  | 4    | 6.661855 | 1 | prueba        |
| 102 | 1.05841506  | 196  | 7.235619 | 1 | entrenamiento |
| 103 | 0.87833959  | 81   | 7.279319 | 1 | entrenamiento |
| 104 | 1.65490830  | 121  | 7.450080 | 1 | entrenamiento |
| 105 | 1.32175589  | 81   | 6.684612 | 1 | prueba        |
| 106 | 0.32851210  | 36   | 5.886104 | 1 | entrenamiento |
| 107 | 1.38629436  | 361  | 7.600902 | 1 | prueba        |
| 108 | 1.17288458  | 676  | 7.069874 | 1 | prueba        |
| 109 | 1.22418714  | 361  | 7.629490 | 1 | entrenamiento |
| 110 | 0.28765708  | 9    | 6.802395 | 1 | entrenamiento |
| 111 | 2.23026180  | 49   | 5.370638 | 1 | prueba        |
| 112 | 1.50407743  | 784  | 7.600902 | 1 | entrenamiento |
| 113 | 1.53115201  | 169  | 6.629363 | 1 | entrenamiento |
| 114 | 1.37515759  | 81   | 7.142037 | 1 | prueba        |
| 115 | 1.76026881  | 225  | 7.632401 | 1 | prueba        |
| 116 | -0.69314718 | 400  | 7.154615 | 1 | entrenamiento |
| 117 | 1.40648913  | 841  | 7.447168 | 1 | prueba        |
| 118 | 1.79175949  | 81   | 7.600902 | 1 | prueba        |
| 119 | 1.29929209  | 1    | 2.484907 | 1 | entrenamiento |
| 120 | 1.35100389  | 64   | 7.331715 | 1 | prueba        |
| 121 | 1.01628089  | 361  | 6.329721 | 1 | prueba        |
| 122 | 1.07534361  | 529  | 7.629490 | 1 | entrenamiento |
| 123 | 1.47896469  | 9    | 7.508239 | 1 | prueba        |
| 124 | 1.68948674  | 169  | 7.426549 | 1 | entrenamiento |
| 125 | 2.28859782  | 64   | 7.272398 | 1 | entrenamiento |
| 126 | -1.82263112 | 289  | 8.507143 | 1 | entrenamiento |
| 127 | -0.96076518 | 16   | 7.069874 | 1 | entrenamiento |
| 128 | 1.29099417  | 225  | 7.003065 | 1 | entrenamiento |
| 129 | 0.86487114  | 121  | 7.323831 | 1 | prueba        |
| 130 | 1.54045212  | 49   | 6.802395 | 1 | prueba        |
| 131 | 0.61621213  | 0    | 6.984716 | 1 | entrenamiento |
| 132 | 1.64865863  | 0    | 6.173786 | 1 | prueba        |
| 133 | 1.19349813  | 100  | 5.662960 | 1 | entrenamiento |
| 134 | 2.14397621  | 64   | 7.536364 | 1 | prueba        |
| 135 | 0.72440356  | 4    | 6.445720 | 1 | prueba        |
| 136 | 0.94160753  | 16   | 5.455321 | 1 | entrenamiento |
| 137 | 0.78275937  | 36   | 7.377759 | 1 | prueba        |
| 138 | 1.83258152  | 324  | 6.866933 | 1 | entrenamiento |
| 139 | 1.20396280  | 9    | 4.787492 | 1 | prueba        |
| 140 | 1.49164486  | 484  | 7.613325 | 1 | prueba        |
| 141 | 1.89213264  | 1089 | 7.500529 | 1 | entrenamiento |
| 142 | 2.13089490  | 784  | 8.034955 | 1 | prueba        |

|     |            |     |          |   |               |
|-----|------------|-----|----------|---|---------------|
| 143 | 1.48060405 | 529 | 6.813445 | 1 | prueba        |
| 144 | 0.89433134 | 729 | 7.517521 | 1 | entrenamiento |
| 145 | 0.20253254 | 121 | 6.664409 | 1 | entrenamiento |
| 146 | 0.48550782 | 36  | 5.991465 | 1 | entrenamiento |
| 147 | 1.09861231 | 121 | 6.907755 | 1 | prueba        |
| 148 | 1.55326962 | 196 | 7.551712 | 1 | prueba        |
| 149 | 0.12159797 | 289 | 7.479300 | 1 | entrenamiento |
| 150 | 2.00180435 | 289 | 7.303843 | 1 | entrenamiento |
| 151 | 1.49503660 | 196 | 6.606650 | 1 | prueba        |
| 152 | 0.90522981 | 121 | 7.506592 | 1 | prueba        |
| 153 | 0.63254756 | 49  | 7.150701 | 1 | entrenamiento |
| 154 | 1.38629436 | 64  | 6.109248 | 1 | entrenamiento |
| 155 | 2.10291386 | 36  | 7.107425 | 1 | prueba        |
| 156 | 1.95964396 | 64  | 7.346010 | 1 | prueba        |
| 157 | 0.51084560 | 16  | 5.192957 | 1 | prueba        |
| 158 | 1.23692393 | 625 | 7.644919 | 1 | prueba        |
| 159 | 1.44331253 | 576 | 7.580700 | 1 | entrenamiento |
| 160 | 1.02165926 | 121 | 7.272398 | 1 | prueba        |
| 161 | 0.63615346 | 361 | 6.677083 | 1 | prueba        |
| 162 | 1.61645329 | 81  | 6.900731 | 1 | entrenamiento |
| 163 | 0.22314355 | 361 | 5.075174 | 1 | prueba        |
| 164 | 1.04980707 | 196 | 4.653960 | 1 | prueba        |
| 165 | 1.41505194 | 484 | 7.090077 | 1 | prueba        |
| 166 | 0.57537663 | 36  | 6.109248 | 1 | prueba        |
| 167 | 2.60668159 | 529 | 6.903747 | 1 | prueba        |
| 168 | 1.51791453 | 225 | 6.958448 | 1 | entrenamiento |
| 169 | 0.75504160 | 36  | 7.028201 | 1 | entrenamiento |
| 170 | 1.09497237 | 121 | 7.517521 | 1 | prueba        |
| 171 | 0.94211435 | 4   | 7.554859 | 1 | entrenamiento |
| 172 | 1.72494280 | 484 | 6.887553 | 1 | prueba        |
| 173 | 1.03154612 | 100 | 7.748029 | 1 | prueba        |
| 174 | 0.47436908 | 196 | 6.993015 | 1 | prueba        |
| 175 | 0.81093019 | 144 | 6.684612 | 1 | prueba        |
| 176 | 0.70926660 | 81  | 7.114769 | 1 | entrenamiento |
| 177 | 1.71054947 | 169 | 7.054450 | 1 | prueba        |
| 178 | 0.46026888 | 324 | 7.728416 | 1 | entrenamiento |
| 179 | 1.33181179 | 64  | 6.269096 | 1 | prueba        |
| 180 | 1.09861231 | 121 | 6.907755 | 1 | entrenamiento |
| 181 | 2.15799856 | 81  | 6.253829 | 1 | prueba        |
| 182 | 1.43758130 | 81  | 6.633318 | 1 | prueba        |
| 183 | 1.54489934 | 196 | 7.560080 | 1 | prueba        |
| 184 | 1.41059673 | 81  | 7.106606 | 1 | entrenamiento |
| 185 | 3.21887589 | 4   | 5.298317 | 1 | prueba        |

|     |             |     |          |   |               |
|-----|-------------|-----|----------|---|---------------|
| 186 | 0.96816188  | 144 | 7.816014 | 1 | entrenamiento |
| 187 | 1.79175949  | 225 | 7.919356 | 1 | entrenamiento |
| 188 | 1.68872952  | 121 | 7.607878 | 1 | prueba        |
| 189 | -0.40917197 | 49  | 7.211557 | 1 | entrenamiento |
| 190 | 0.22314355  | 81  | 4.382027 | 1 | entrenamiento |
| 191 | 0.82215583  | 361 | 7.420579 | 1 | entrenamiento |
| 192 | 1.24170196  | 121 | 6.253829 | 1 | entrenamiento |
| 193 | 1.42712438  | 64  | 5.662960 | 1 | prueba        |
| 194 | 1.49709749  | 169 | 7.607878 | 1 | entrenamiento |
| 195 | 0.55961579  | 16  | 6.684612 | 1 | prueba        |
| 196 | 1.30002820  | 49  | 7.592870 | 1 | prueba        |
| 197 | 1.88442981  | 361 | 7.508239 | 1 | prueba        |
| 198 | 0.95551139  | 196 | 7.313220 | 1 | prueba        |
| 199 | 1.58208728  | 196 | 7.723562 | 1 | entrenamiento |
| 200 | 1.75561404  | 9   | 7.454720 | 1 | entrenamiento |
| 201 | 1.51310325  | 81  | 7.580700 | 1 | prueba        |
| 202 | 2.25189161  | 49  | 7.363914 | 1 | prueba        |
| 203 | 2.36443233  | 49  | 7.182352 | 1 | entrenamiento |
| 204 | 0.10535048  | 196 | 7.333023 | 1 | entrenamiento |
| 205 | 1.39972878  | 841 | 7.705262 | 1 | prueba        |
| 206 | 0.98846251  | 361 | 7.197435 | 1 | entrenamiento |
| 207 | 1.09064734  | 196 | 6.915723 | 1 | prueba        |
| 208 | 1.15461445  | 256 | 7.572503 | 1 | prueba        |
| 209 | 1.26694763  | 100 | 7.600902 | 1 | entrenamiento |
| 210 | 2.88519168  | 144 | 5.552960 | 1 | prueba        |
| 211 | 1.22888005  | 576 | 7.487174 | 1 | entrenamiento |
| 212 | 1.20396280  | 36  | 6.173786 | 1 | prueba        |
| 213 | 1.35738027  | 81  | 6.648985 | 1 | entrenamiento |
| 214 | 0.83772361  | 196 | 6.802395 | 1 | prueba        |
| 215 | 0.53696114  | 676 | 7.264030 | 1 | prueba        |
| 216 | 0.74872380  | 49  | 5.347108 | 1 | entrenamiento |
| 217 | 2.29587269  | 16  | 5.476464 | 1 | entrenamiento |
| 218 | 1.10780323  | 225 | 7.537963 | 1 | entrenamiento |
| 219 | 0.62084526  | 529 | 5.370638 | 1 | entrenamiento |
| 220 | -2.05416369 | 1   | 7.757906 | 1 | prueba        |
| 221 | 1.89201200  | 841 | 7.580700 | 1 | entrenamiento |
| 222 | 1.72972453  | 81  | 6.276643 | 1 | prueba        |
| 223 | 0.46937841  | 36  | 5.976351 | 1 | prueba        |
| 224 | 0.98084170  | 121 | 6.514713 | 1 | prueba        |
| 225 | 2.06949234  | 289 | 7.323171 | 1 | prueba        |
| 226 | 1.67518818  | 36  | 6.937314 | 1 | prueba        |
| 227 | 1.38629436  | 49  | 7.130899 | 1 | prueba        |
| 228 | 1.79921496  | 4   | 7.054450 | 1 | prueba        |

|     |             |      |          |   |               |
|-----|-------------|------|----------|---|---------------|
| 229 | 1.83258152  | 576  | 4.718499 | 1 | entrenamiento |
| 230 | 1.09064734  | 16   | 5.817111 | 1 | entrenamiento |
| 231 | 1.44312358  | 121  | 7.592870 | 1 | prueba        |
| 232 | 1.25036013  | 625  | 6.573680 | 1 | prueba        |
| 233 | 1.60231256  | 121  | 7.251345 | 1 | prueba        |
| 234 | 1.01855850  | 4    | 7.170120 | 1 | entrenamiento |
| 235 | 1.29705322  | 361  | 7.402452 | 1 | entrenamiento |
| 236 | 1.68519449  | 49   | 7.091742 | 1 | entrenamiento |
| 237 | -0.42098489 | 4    | 6.192362 | 1 | prueba        |
| 238 | 1.56209469  | 400  | 7.638198 | 1 | prueba        |
| 239 | 2.14652753  | 100  | 6.265301 | 1 | prueba        |
| 240 | 2.34746289  | 361  | 7.450661 | 1 | entrenamiento |
| 241 | 0.96983153  | 289  | 7.190676 | 1 | entrenamiento |
| 242 | 1.92414641  | 144  | 6.369901 | 1 | prueba        |
| 243 | 1.62672758  | 121  | 7.226936 | 1 | entrenamiento |
| 244 | -0.03926073 | 36   | 6.946976 | 1 | entrenamiento |
| 245 | 1.46014869  | 100  | 6.306275 | 1 | prueba        |
| 246 | 1.95539355  | 16   | 2.708050 | 1 | entrenamiento |
| 247 | 0.92635989  | 4    | 7.590852 | 1 | prueba        |
| 248 | 2.06619167  | 169  | 7.326466 | 1 | prueba        |
| 249 | 1.42284322  | 441  | 7.539027 | 1 | entrenamiento |
| 250 | 2.10103178  | 81   | 7.138867 | 1 | entrenamiento |
| 251 | 2.26146102  | 16   | 6.995766 | 1 | prueba        |
| 252 | 0.70131379  | 4    | 7.369601 | 1 | entrenamiento |
| 253 | 2.03101254  | 361  | 5.049856 | 1 | prueba        |
| 254 | 1.16236925  | 16   | 7.569928 | 1 | prueba        |
| 255 | 0.47000363  | 81   | 7.130899 | 1 | entrenamiento |
| 256 | 1.41059673  | 196  | 6.413459 | 1 | entrenamiento |
| 257 | 0.39305511  | 36   | 5.598422 | 1 | prueba        |
| 258 | 1.29099417  | 576  | 6.492240 | 1 | prueba        |
| 259 | 0.00000000  | 1    | 6.907755 | 1 | entrenamiento |
| 260 | 0.95712548  | 169  | 7.560080 | 1 | entrenamiento |
| 261 | 0.55961579  | 9    | 5.298317 | 1 | entrenamiento |
| 262 | 1.56861591  | 100  | 7.313220 | 1 | prueba        |
| 263 | 1.71018791  | 256  | 6.766192 | 1 | prueba        |
| 264 | 1.41059673  | 81   | 7.748460 | 1 | prueba        |
| 265 | 0.22314355  | 361  | 7.600902 | 1 | prueba        |
| 266 | 0.51084560  | 16   | 4.094345 | 1 | prueba        |
| 267 | 1.33239245  | 100  | 7.447168 | 1 | prueba        |
| 268 | 0.86018586  | 25   | 6.309918 | 1 | prueba        |
| 269 | 2.32277989  | 49   | 7.580700 | 1 | entrenamiento |
| 270 | 1.91959548  | 9    | 3.784190 | 1 | entrenamiento |
| 271 | 1.97610676  | 1444 | 7.560080 | 1 | entrenamiento |

|     |             |      |          |   |               |
|-----|-------------|------|----------|---|---------------|
| 272 | 0.89543474  | 256  | 7.839919 | 1 | prueba        |
| 273 | 0.18123759  | 169  | 5.049856 | 1 | entrenamiento |
| 274 | 0.49530584  | 1    | 6.659294 | 1 | prueba        |
| 275 | 0.57779241  | 49   | 8.045588 | 1 | entrenamiento |
| 276 | 1.07881773  | 225  | 7.620705 | 1 | prueba        |
| 277 | 1.60319853  | 100  | 7.383989 | 1 | entrenamiento |
| 278 | 0.62084526  | 4    | 5.370638 | 1 | prueba        |
| 279 | 2.08389401  | 361  | 7.021084 | 1 | entrenamiento |
| 280 | 1.37916911  | 625  | 6.740519 | 1 | prueba        |
| 281 | 1.11238372  | 625  | 8.078688 | 1 | prueba        |
| 282 | 1.06712162  | 49   | 7.226936 | 1 | entrenamiento |
| 283 | 1.11880696  | 225  | 6.887553 | 1 | prueba        |
| 284 | 1.58854103  | 121  | 7.516433 | 1 | prueba        |
| 285 | 1.39031124  | 625  | 7.309212 | 1 | prueba        |
| 286 | 1.71480644  | 361  | 6.109248 | 1 | prueba        |
| 287 | 0.20106153  | 16   | 7.588830 | 1 | prueba        |
| 288 | 0.98727101  | 196  | 7.606885 | 1 | prueba        |
| 289 | 0.98350066  | 361  | 6.329721 | 1 | entrenamiento |
| 290 | 2.23317075  | 324  | 7.447168 | 1 | prueba        |
| 291 | 1.14361751  | 196  | 7.555905 | 1 | prueba        |
| 292 | -0.61138290 | 121  | 8.212297 | 1 | prueba        |
| 293 | 2.15305209  | 16   | 6.984716 | 1 | prueba        |
| 294 | 1.29983735  | 841  | 7.494986 | 1 | entrenamiento |
| 295 | 0.84092045  | 441  | 7.592870 | 1 | entrenamiento |
| 296 | 1.05848444  | 576  | 7.516977 | 1 | entrenamiento |
| 297 | 1.15265846  | 361  | 7.364547 | 1 | entrenamiento |
| 298 | 1.29357588  | 961  | 4.564348 | 1 | prueba        |
| 299 | 1.83258152  | 784  | 7.560080 | 1 | prueba        |
| 300 | 2.32718015  | 225  | 7.431300 | 1 | prueba        |
| 301 | 1.16614628  | 729  | 7.370860 | 1 | entrenamiento |
| 302 | 2.03499317  | 169  | 5.843544 | 1 | prueba        |
| 303 | 0.67925107  | 16   | 7.327123 | 1 | prueba        |
| 304 | 1.54713690  | 100  | 7.306531 | 1 | entrenamiento |
| 305 | 0.75301856  | 64   | 6.896694 | 1 | entrenamiento |
| 306 | 0.84728360  | 16   | 6.396930 | 1 | prueba        |
| 307 | 0.87112600  | 324  | 7.880804 | 1 | prueba        |
| 308 | 0.22825047  | 9    | 7.672758 | 1 | prueba        |
| 309 | 0.08965783  | 121  | 5.768321 | 1 | prueba        |
| 310 | 1.32175589  | 64   | 7.377759 | 1 | prueba        |
| 311 | 1.19610190  | 100  | 7.791110 | 1 | entrenamiento |
| 312 | 1.63611877  | 1089 | 7.603399 | 1 | entrenamiento |
| 313 | 1.89201200  | 361  | 7.580700 | 1 | entrenamiento |
| 314 | 1.51830900  | 1225 | 7.671827 | 1 | entrenamiento |



|     |             |     |          |   |               |
|-----|-------------|-----|----------|---|---------------|
| 315 | 2.47215915  | 441 | 7.095893 | 1 | entrenamiento |
| 316 | 1.32175589  | 49  | 7.600902 | 1 | prueba        |
| 317 | 1.47364104  | 324 | 7.138867 | 1 | prueba        |
| 318 | 1.36947882  | 16  | 4.499810 | 1 | prueba        |
| 319 | 1.20396280  | 144 | 7.495542 | 1 | entrenamiento |
| 320 | 1.19872916  | 256 | 6.350886 | 1 | prueba        |
| 321 | 1.27020991  | 196 | 7.509335 | 1 | prueba        |
| 322 | 0.47000363  | 9   | 4.317488 | 1 | entrenamiento |
| 323 | 0.79998165  | 1   | 7.206377 | 1 | entrenamiento |
| 324 | 1.56594563  | 729 | 7.539027 | 1 | entrenamiento |
| 325 | 1.75897801  | 144 | 7.122867 | 1 | prueba        |
| 326 | 0.85802585  | 36  | 6.742881 | 1 | entrenamiento |
| 327 | 0.69314718  | 81  | 5.010635 | 1 | entrenamiento |
| 328 | 0.64185387  | 4   | 7.600902 | 1 | entrenamiento |
| 329 | 1.63374019  | 36  | 7.576610 | 1 | entrenamiento |
| 330 | 1.70374763  | 81  | 7.283448 | 1 | prueba        |
| 331 | 1.84400403  | 256 | 7.461640 | 1 | entrenamiento |
| 332 | 1.96611881  | 484 | 7.244228 | 1 | prueba        |
| 333 | 0.86499745  | 676 | 7.600902 | 1 | entrenamiento |
| 334 | 0.93330520  | 121 | 7.467371 | 1 | prueba        |
| 335 | 0.77923316  | 121 | 7.003974 | 1 | prueba        |
| 336 | 0.95551139  | 225 | 7.600902 | 1 | prueba        |
| 337 | 1.31624734  | 169 | 7.537430 | 1 | prueba        |
| 338 | 1.47590649  | 36  | 5.075174 | 1 | entrenamiento |
| 339 | 1.49139726  | 400 | 7.542213 | 1 | prueba        |
| 340 | 1.45575047  | 289 | 7.276556 | 1 | entrenamiento |
| 341 | 0.51084560  | 64  | 7.313220 | 1 | entrenamiento |
| 342 | 1.18043804  | 169 | 6.756932 | 1 | entrenamiento |
| 343 | 1.68848944  | 225 | 7.521859 | 1 | entrenamiento |
| 344 | 0.79072750  | 196 | 7.425358 | 1 | entrenamiento |
| 345 | 1.40179861  | 196 | 5.075174 | 1 | entrenamiento |
| 346 | -0.43355602 | 36  | 4.682131 | 1 | entrenamiento |
| 347 | 1.68317151  | 576 | 7.460490 | 1 | entrenamiento |
| 348 | -1.76667666 | 100 | 7.064759 | 1 | entrenamiento |
| 349 | 3.15559506  | 4   | 2.708050 | 1 | entrenamiento |
| 350 | 2.25952101  | 81  | 7.643962 | 1 | prueba        |
| 351 | 1.30692637  | 529 | 7.820038 | 1 | entrenamiento |
| 352 | 0.79849768  | 144 | 4.905275 | 1 | entrenamiento |
| 353 | 0.55904418  | 64  | 7.572503 | 1 | entrenamiento |
| 354 | 0.14790262  | 256 | 6.536692 | 1 | entrenamiento |
| 355 | 1.94449484  | 100 | 6.410175 | 1 | prueba        |
| 356 | 1.37833786  | 49  | 4.143135 | 1 | prueba        |
| 357 | 3.06474519  | 361 | 5.036953 | 1 | entrenamiento |

|     |             |      |          |   |               |
|-----|-------------|------|----------|---|---------------|
| 358 | -0.74191731 | 4    | 6.040255 | 1 | prueba        |
| 359 | 0.76570040  | 81   | 6.478510 | 1 | prueba        |
| 360 | 0.61939299  | 196  | 6.514713 | 1 | prueba        |
| 361 | 1.46545208  | 81   | 7.416378 | 1 | prueba        |
| 362 | 2.18925953  | 256  | 7.426549 | 1 | entrenamiento |
| 363 | 1.02165926  | 49   | 5.192957 | 1 | entrenamiento |
| 364 | 0.97700948  | 36   | 7.365813 | 1 | prueba        |
| 365 | 0.91629076  | 484  | 7.090077 | 1 | entrenamiento |
| 366 | 2.90509605  | 81   | 6.109248 | 1 | entrenamiento |
| 367 | -0.19967119 | 81   | 6.304449 | 1 | entrenamiento |
| 368 | 0.69314718  | 196  | 5.703782 | 1 | entrenamiento |
| 369 | 2.73339295  | 289  | 6.882437 | 1 | prueba        |
| 370 | 1.86833465  | 144  | 7.390799 | 1 | entrenamiento |
| 371 | 2.12025952  | 169  | 5.703782 | 1 | entrenamiento |
| 372 | 1.51519322  | 64   | 7.532624 | 1 | entrenamiento |
| 373 | 0.91460931  | 100  | 7.497207 | 1 | entrenamiento |
| 374 | 1.49955606  | 256  | 7.669962 | 1 | prueba        |
| 375 | 0.80307722  | 1    | 6.984716 | 1 | entrenamiento |
| 376 | 0.72803164  | 36   | 7.209340 | 1 | entrenamiento |
| 377 | 0.51640999  | 16   | 6.285998 | 1 | prueba        |
| 378 | 1.22644830  | 64   | 5.863631 | 1 | entrenamiento |
| 379 | 0.91629076  | 16   | 5.298317 | 1 | prueba        |
| 380 | 1.37647128  | 225  | 7.623153 | 1 | prueba        |
| 381 | 1.82897496  | 49   | 7.133296 | 1 | entrenamiento |
| 382 | 1.36828315  | 196  | 7.580700 | 1 | entrenamiento |
| 383 | 1.06471074  | 256  | 7.600902 | 1 | entrenamiento |
| 384 | 1.40648913  | 225  | 7.580700 | 1 | prueba        |
| 385 | 1.04731894  | 529  | 7.600902 | 1 | entrenamiento |
| 386 | 1.94809341  | 361  | 7.357556 | 1 | entrenamiento |
| 387 | 1.07800138  | 16   | 7.110696 | 1 | prueba        |
| 388 | 0.65393847  | 144  | 6.659294 | 1 | prueba        |
| 389 | 1.92789161  | 144  | 6.173786 | 1 | prueba        |
| 390 | 1.36102784  | 625  | 7.561642 | 1 | entrenamiento |
| 391 | 0.69314718  | 196  | 7.600902 | 1 | entrenamiento |
| 392 | 1.60468662  | 196  | 7.654443 | 1 | prueba        |
| 393 | 0.18390365  | 121  | 7.416980 | 1 | prueba        |
| 394 | 3.11351538  | 49   | 3.871201 | 1 | entrenamiento |
| 395 | 1.92682922  | 324  | 7.490529 | 1 | prueba        |
| 396 | 1.27012563  | 16   | 7.247081 | 1 | entrenamiento |
| 397 | 0.68269271  | 1369 | 7.560080 | 1 | entrenamiento |
| 398 | 1.68106997  | 169  | 7.669028 | 1 | entrenamiento |
| 399 | 0.55629599  | 196  | 7.450080 | 1 | prueba        |
| 400 | 1.62822044  | 289  | 8.169903 | 1 | entrenamiento |

|     |             |     |          |   |               |
|-----|-------------|-----|----------|---|---------------|
| 401 | 0.91629076  | 25  | 7.600902 | 1 | entrenamiento |
| 402 | 1.34155846  | 4   | 6.684612 | 1 | entrenamiento |
| 403 | 0.00000000  | 0   | 8.006368 | 1 | entrenamiento |
| 404 | 1.12223125  | 9   | 5.680173 | 1 | prueba        |
| 405 | 0.54017079  | 441 | 7.534763 | 1 | prueba        |
| 406 | 1.39150572  | 400 | 7.629490 | 1 | entrenamiento |
| 407 | 1.69717395  | 361 | 7.513164 | 1 | prueba        |
| 408 | 3.21887589  | 16  | 4.787492 | 1 | prueba        |
| 409 | 0.87116778  | 361 | 7.397562 | 1 | entrenamiento |
| 410 | 1.16732955  | 121 | 6.656727 | 1 | prueba        |
| 411 | 1.21698773  | 196 | 7.592870 | 1 | entrenamiento |
| 412 | 0.57537663  | 64  | 5.416100 | 1 | prueba        |
| 413 | 1.15161574  | 169 | 7.580700 | 1 | entrenamiento |
| 414 | 0.99425125  | 576 | 6.095825 | 1 | prueba        |
| 415 | 0.52632493  | 1   | 5.950643 | 1 | prueba        |
| 416 | -1.54318213 | 1   | 7.064759 | 1 | entrenamiento |
| 417 | 1.91204309  | 9   | 7.192934 | 1 | entrenamiento |
| 418 | 0.55428731  | 16  | 7.207860 | 1 | entrenamiento |
| 419 | 0.91629076  | 441 | 6.173786 | 1 | prueba        |
| 420 | 1.50093913  | 100 | 7.592870 | 1 | entrenamiento |
| 421 | 0.94468379  | 169 | 7.572503 | 1 | prueba        |
| 422 | 1.24126863  | 81  | 3.912023 | 1 | entrenamiento |
| 423 | 1.56498432  | 196 | 6.131226 | 1 | entrenamiento |
| 424 | 0.83802646  | 4   | 6.522093 | 1 | prueba        |
| 425 | 1.66885710  | 441 | 7.803843 | 1 | prueba        |
| 426 | 1.76942861  | 484 | 7.670429 | 1 | entrenamiento |
| 427 | 1.22644830  | 196 | 7.473069 | 1 | prueba        |
| 428 | 1.40648913  | 49  | 6.194405 | 1 | prueba        |
| 429 | NA          | 4   | NA       | 0 | prueba        |
| 430 | NA          | 25  | NA       | 0 | entrenamiento |
| 431 | NA          | 144 | NA       | 0 | entrenamiento |
| 432 | NA          | 1   | NA       | 0 | entrenamiento |
| 433 | NA          | 144 | NA       | 0 | prueba        |
| 434 | NA          | 16  | NA       | 0 | prueba        |
| 435 | NA          | 81  | NA       | 0 | entrenamiento |
| 436 | NA          | 81  | NA       | 0 | entrenamiento |
| 437 | NA          | 36  | NA       | 0 | entrenamiento |
| 438 | NA          | 25  | NA       | 0 | prueba        |
| 439 | NA          | 25  | NA       | 0 | entrenamiento |
| 440 | NA          | 64  | NA       | 0 | entrenamiento |
| 441 | NA          | 4   | NA       | 0 | entrenamiento |
| 442 | NA          | 36  | NA       | 0 | entrenamiento |
| 443 | NA          | 0   | NA       | 0 | prueba        |

|     |    |     |    |   |               |
|-----|----|-----|----|---|---------------|
| 444 | NA | 9   | NA | 0 | prueba        |
| 445 | NA | 49  | NA | 0 | entrenamiento |
| 446 | NA | 9   | NA | 0 | prueba        |
| 447 | NA | 100 | NA | 0 | entrenamiento |
| 448 | NA | 9   | NA | 0 | entrenamiento |
| 449 | NA | 4   | NA | 0 | entrenamiento |
| 450 | NA | 144 | NA | 0 | prueba        |
| 451 | NA | 225 | NA | 0 | entrenamiento |
| 452 | NA | 25  | NA | 0 | prueba        |
| 453 | NA | 16  | NA | 0 | prueba        |
| 454 | NA | 100 | NA | 0 | entrenamiento |
| 455 | NA | 1   | NA | 0 | entrenamiento |
| 456 | NA | 64  | NA | 0 | entrenamiento |
| 457 | NA | 400 | NA | 0 | prueba        |
| 458 | NA | 16  | NA | 0 | prueba        |
| 459 | NA | 49  | NA | 0 | entrenamiento |
| 460 | NA | 100 | NA | 0 | prueba        |
| 461 | NA | 9   | NA | 0 | prueba        |
| 462 | NA | 25  | NA | 0 | entrenamiento |
| 463 | NA | 100 | NA | 0 | entrenamiento |
| 464 | NA | 0   | NA | 0 | prueba        |
| 465 | NA | 9   | NA | 0 | prueba        |
| 466 | NA | 100 | NA | 0 | entrenamiento |
| 467 | NA | 4   | NA | 0 | prueba        |
| 468 | NA | 100 | NA | 0 | prueba        |
| 469 | NA | 16  | NA | 0 | entrenamiento |
| 470 | NA | 0   | NA | 0 | entrenamiento |
| 471 | NA | 100 | NA | 0 | prueba        |
| 472 | NA | 25  | NA | 0 | prueba        |
| 473 | NA | 0   | NA | 0 | prueba        |
| 474 | NA | 0   | NA | 0 | prueba        |
| 475 | NA | 361 | NA | 0 | entrenamiento |
| 476 | NA | 4   | NA | 0 | prueba        |
| 477 | NA | 144 | NA | 0 | entrenamiento |
| 478 | NA | 25  | NA | 0 | entrenamiento |
| 479 | NA | 25  | NA | 0 | entrenamiento |
| 480 | NA | 25  | NA | 0 | entrenamiento |
| 481 | NA | 100 | NA | 0 | entrenamiento |
| 482 | NA | 0   | NA | 0 | prueba        |
| 483 | NA | 16  | NA | 0 | entrenamiento |
| 484 | NA | 9   | NA | 0 | entrenamiento |
| 485 | NA | 4   | NA | 0 | prueba        |
| 486 | NA | 1   | NA | 0 | prueba        |

|     |    |     |    |   |               |
|-----|----|-----|----|---|---------------|
| 487 | NA | 0   | NA | 0 | entrenamiento |
| 488 | NA | 1   | NA | 0 | entrenamiento |
| 489 | NA | 1   | NA | 0 | entrenamiento |
| 490 | NA | 36  | NA | 0 | entrenamiento |
| 491 | NA | 144 | NA | 0 | prueba        |
| 492 | NA | 36  | NA | 0 | entrenamiento |
| 493 | NA | 81  | NA | 0 | prueba        |
| 494 | NA | 196 | NA | 0 | prueba        |
| 495 | NA | 169 | NA | 0 | prueba        |
| 496 | NA | 64  | NA | 0 | entrenamiento |
| 497 | NA | 0   | NA | 0 | prueba        |
| 498 | NA | 1   | NA | 0 | prueba        |
| 499 | NA | 9   | NA | 0 | prueba        |
| 500 | NA | 169 | NA | 0 | entrenamiento |
| 501 | NA | 9   | NA | 0 | prueba        |
| 502 | NA | 64  | NA | 0 | prueba        |
| 503 | NA | 64  | NA | 0 | prueba        |
| 504 | NA | 324 | NA | 0 | prueba        |
| 505 | NA | 4   | NA | 0 | prueba        |
| 506 | NA | 9   | NA | 0 | prueba        |
| 507 | NA | 25  | NA | 0 | entrenamiento |
| 508 | NA | 4   | NA | 0 | entrenamiento |
| 509 | NA | 100 | NA | 0 | entrenamiento |
| 510 | NA | 900 | NA | 0 | prueba        |
| 511 | NA | 1   | NA | 0 | entrenamiento |
| 512 | NA | 25  | NA | 0 | prueba        |
| 513 | NA | 64  | NA | 0 | prueba        |
| 514 | NA | 0   | NA | 0 | prueba        |
| 515 | NA | 16  | NA | 0 | prueba        |
| 516 | NA | 4   | NA | 0 | prueba        |
| 517 | NA | 900 | NA | 0 | prueba        |
| 518 | NA | 625 | NA | 0 | entrenamiento |
| 519 | NA | 9   | NA | 0 | entrenamiento |
| 520 | NA | 400 | NA | 0 | prueba        |
| 521 | NA | 400 | NA | 0 | entrenamiento |
| 522 | NA | 0   | NA | 0 | entrenamiento |
| 523 | NA | 225 | NA | 0 | entrenamiento |
| 524 | NA | 100 | NA | 0 | prueba        |
| 525 | NA | 16  | NA | 0 | prueba        |
| 526 | NA | 9   | NA | 0 | entrenamiento |
| 527 | NA | 100 | NA | 0 | entrenamiento |
| 528 | NA | 81  | NA | 0 | prueba        |
| 529 | NA | 49  | NA | 0 | prueba        |

|     |    |     |    |   |               |
|-----|----|-----|----|---|---------------|
| 530 | NA | 144 | NA | 0 | entrenamiento |
| 531 | NA | 0   | NA | 0 | entrenamiento |
| 532 | NA | 256 | NA | 0 | entrenamiento |
| 533 | NA | 16  | NA | 0 | entrenamiento |
| 534 | NA | 49  | NA | 0 | prueba        |
| 535 | NA | 49  | NA | 0 | entrenamiento |
| 536 | NA | 196 | NA | 0 | entrenamiento |
| 537 | NA | 4   | NA | 0 | prueba        |
| 538 | NA | 400 | NA | 0 | prueba        |
| 539 | NA | 25  | NA | 0 | prueba        |
| 540 | NA | 100 | NA | 0 | prueba        |
| 541 | NA | 400 | NA | 0 | prueba        |
| 542 | NA | 100 | NA | 0 | prueba        |
| 543 | NA | 64  | NA | 0 | entrenamiento |
| 544 | NA | 121 | NA | 0 | entrenamiento |
| 545 | NA | 9   | NA | 0 | entrenamiento |
| 546 | NA | 36  | NA | 0 | prueba        |
| 547 | NA | 16  | NA | 0 | entrenamiento |
| 548 | NA | 16  | NA | 0 | entrenamiento |
| 549 | NA | 81  | NA | 0 | entrenamiento |
| 550 | NA | 100 | NA | 0 | prueba        |
| 551 | NA | 9   | NA | 0 | prueba        |
| 552 | NA | 4   | NA | 0 | entrenamiento |
| 553 | NA | 4   | NA | 0 | prueba        |
| 554 | NA | 0   | NA | 0 | entrenamiento |
| 555 | NA | 64  | NA | 0 | prueba        |
| 556 | NA | 36  | NA | 0 | entrenamiento |
| 557 | NA | 225 | NA | 0 | prueba        |
| 558 | NA | 225 | NA | 0 | entrenamiento |
| 559 | NA | 81  | NA | 0 | prueba        |
| 560 | NA | 64  | NA | 0 | entrenamiento |
| 561 | NA | 324 | NA | 0 | entrenamiento |
| 562 | NA | 9   | NA | 0 | prueba        |
| 563 | NA | 100 | NA | 0 | entrenamiento |
| 564 | NA | 36  | NA | 0 | entrenamiento |
| 565 | NA | 400 | NA | 0 | entrenamiento |
| 566 | NA | 64  | NA | 0 | prueba        |
| 567 | NA | 9   | NA | 0 | entrenamiento |
| 568 | NA | 16  | NA | 0 | entrenamiento |
| 569 | NA | 169 | NA | 0 | prueba        |
| 570 | NA | 16  | NA | 0 | entrenamiento |
| 571 | NA | 289 | NA | 0 | entrenamiento |
| 572 | NA | 16  | NA | 0 | entrenamiento |

|     |    |      |    |   |               |
|-----|----|------|----|---|---------------|
| 573 | NA | 0    | NA | 0 | prueba        |
| 574 | NA | 225  | NA | 0 | entrenamiento |
| 575 | NA | 121  | NA | 0 | entrenamiento |
| 576 | NA | 529  | NA | 0 | prueba        |
| 577 | NA | 1    | NA | 0 | entrenamiento |
| 578 | NA | 25   | NA | 0 | entrenamiento |
| 579 | NA | 1    | NA | 0 | prueba        |
| 580 | NA | 25   | NA | 0 | entrenamiento |
| 581 | NA | 9    | NA | 0 | entrenamiento |
| 582 | NA | 9    | NA | 0 | prueba        |
| 583 | NA | 361  | NA | 0 | entrenamiento |
| 584 | NA | 400  | NA | 0 | entrenamiento |
| 585 | NA | 25   | NA | 0 | prueba        |
| 586 | NA | 0    | NA | 0 | entrenamiento |
| 587 | NA | 9    | NA | 0 | entrenamiento |
| 588 | NA | 9    | NA | 0 | entrenamiento |
| 589 | NA | 49   | NA | 0 | prueba        |
| 590 | NA | 49   | NA | 0 | prueba        |
| 591 | NA | 1    | NA | 0 | entrenamiento |
| 592 | NA | 169  | NA | 0 | entrenamiento |
| 593 | NA | 0    | NA | 0 | prueba        |
| 594 | NA | 0    | NA | 0 | entrenamiento |
| 595 | NA | 144  | NA | 0 | prueba        |
| 596 | NA | 0    | NA | 0 | entrenamiento |
| 597 | NA | 25   | NA | 0 | entrenamiento |
| 598 | NA | 2025 | NA | 0 | prueba        |
| 599 | NA | 100  | NA | 0 | prueba        |
| 600 | NA | 4    | NA | 0 | prueba        |
| 601 | NA | 9    | NA | 0 | prueba        |
| 602 | NA | 1    | NA | 0 | prueba        |
| 603 | NA | 25   | NA | 0 | prueba        |
| 604 | NA | 100  | NA | 0 | prueba        |
| 605 | NA | 16   | NA | 0 | entrenamiento |
| 606 | NA | 49   | NA | 0 | entrenamiento |
| 607 | NA | 81   | NA | 0 | entrenamiento |
| 608 | NA | 25   | NA | 0 | prueba        |
| 609 | NA | 16   | NA | 0 | entrenamiento |
| 610 | NA | 121  | NA | 0 | prueba        |
| 611 | NA | 81   | NA | 0 | entrenamiento |
| 612 | NA | 16   | NA | 0 | prueba        |
| 613 | NA | 4    | NA | 0 | prueba        |
| 614 | NA | 529  | NA | 0 | prueba        |
| 615 | NA | 9    | NA | 0 | entrenamiento |

|     |    |      |    |   |               |
|-----|----|------|----|---|---------------|
| 616 | NA | 225  | NA | 0 | prueba        |
| 617 | NA | 64   | NA | 0 | prueba        |
| 618 | NA | 9    | NA | 0 | prueba        |
| 619 | NA | 625  | NA | 0 | prueba        |
| 620 | NA | 4    | NA | 0 | entrenamiento |
| 621 | NA | 0    | NA | 0 | entrenamiento |
| 622 | NA | 361  | NA | 0 | prueba        |
| 623 | NA | 9    | NA | 0 | entrenamiento |
| 624 | NA | 49   | NA | 0 | prueba        |
| 625 | NA | 1    | NA | 0 | entrenamiento |
| 626 | NA | 81   | NA | 0 | prueba        |
| 627 | NA | 9    | NA | 0 | prueba        |
| 628 | NA | 64   | NA | 0 | entrenamiento |
| 629 | NA | 0    | NA | 0 | prueba        |
| 630 | NA | 25   | NA | 0 | entrenamiento |
| 631 | NA | 400  | NA | 0 | entrenamiento |
| 632 | NA | 9    | NA | 0 | entrenamiento |
| 633 | NA | 144  | NA | 0 | entrenamiento |
| 634 | NA | 25   | NA | 0 | prueba        |
| 635 | NA | 1    | NA | 0 | entrenamiento |
| 636 | NA | 0    | NA | 0 | prueba        |
| 637 | NA | 49   | NA | 0 | prueba        |
| 638 | NA | 169  | NA | 0 | prueba        |
| 639 | NA | 9    | NA | 0 | entrenamiento |
| 640 | NA | 0    | NA | 0 | entrenamiento |
| 641 | NA | 4    | NA | 0 | prueba        |
| 642 | NA | 0    | NA | 0 | entrenamiento |
| 643 | NA | 4    | NA | 0 | prueba        |
| 644 | NA | 1    | NA | 0 | entrenamiento |
| 645 | NA | 100  | NA | 0 | entrenamiento |
| 646 | NA | 100  | NA | 0 | entrenamiento |
| 647 | NA | 1    | NA | 0 | entrenamiento |
| 648 | NA | 9    | NA | 0 | prueba        |
| 649 | NA | 1024 | NA | 0 | prueba        |
| 650 | NA | 0    | NA | 0 | entrenamiento |
| 651 | NA | 49   | NA | 0 | entrenamiento |
| 652 | NA | 25   | NA | 0 | prueba        |
| 653 | NA | 4    | NA | 0 | prueba        |
| 654 | NA | 25   | NA | 0 | entrenamiento |
| 655 | NA | 9    | NA | 0 | prueba        |
| 656 | NA | 625  | NA | 0 | entrenamiento |
| 657 | NA | 0    | NA | 0 | prueba        |
| 658 | NA | 9    | NA | 0 | entrenamiento |



|     |    |      |    |   |               |
|-----|----|------|----|---|---------------|
| 659 | NA | 100  | NA | 0 | prueba        |
| 660 | NA | 100  | NA | 0 | entrenamiento |
| 661 | NA | 49   | NA | 0 | prueba        |
| 662 | NA | 25   | NA | 0 | prueba        |
| 663 | NA | 225  | NA | 0 | prueba        |
| 664 | NA | 1    | NA | 0 | prueba        |
| 665 | NA | 25   | NA | 0 | entrenamiento |
| 666 | NA | 81   | NA | 0 | entrenamiento |
| 667 | NA | 324  | NA | 0 | entrenamiento |
| 668 | NA | 1    | NA | 0 | prueba        |
| 669 | NA | 0    | NA | 0 | prueba        |
| 670 | NA | 36   | NA | 0 | prueba        |
| 671 | NA | 1    | NA | 0 | prueba        |
| 672 | NA | 4    | NA | 0 | prueba        |
| 673 | NA | 225  | NA | 0 | entrenamiento |
| 674 | NA | 625  | NA | 0 | entrenamiento |
| 675 | NA | 1    | NA | 0 | entrenamiento |
| 676 | NA | 0    | NA | 0 | prueba        |
| 677 | NA | 0    | NA | 0 | entrenamiento |
| 678 | NA | 0    | NA | 0 | prueba        |
| 679 | NA | 64   | NA | 0 | prueba        |
| 680 | NA | 484  | NA | 0 | entrenamiento |
| 681 | NA | 25   | NA | 0 | prueba        |
| 682 | NA | 100  | NA | 0 | prueba        |
| 683 | NA | 1    | NA | 0 | entrenamiento |
| 684 | NA | 1    | NA | 0 | entrenamiento |
| 685 | NA | 36   | NA | 0 | entrenamiento |
| 686 | NA | 16   | NA | 0 | prueba        |
| 687 | NA | 36   | NA | 0 | prueba        |
| 688 | NA | 0    | NA | 0 | entrenamiento |
| 689 | NA | 1    | NA | 0 | prueba        |
| 690 | NA | 9    | NA | 0 | prueba        |
| 691 | NA | 225  | NA | 0 | entrenamiento |
| 692 | NA | 1089 | NA | 0 | entrenamiento |
| 693 | NA | 4    | NA | 0 | prueba        |
| 694 | NA | 1    | NA | 0 | entrenamiento |
| 695 | NA | 100  | NA | 0 | prueba        |
| 696 | NA | 0    | NA | 0 | prueba        |
| 697 | NA | 196  | NA | 0 | prueba        |
| 698 | NA | 225  | NA | 0 | prueba        |
| 699 | NA | 225  | NA | 0 | prueba        |
| 700 | NA | 100  | NA | 0 | prueba        |
| 701 | NA | 36   | NA | 0 | entrenamiento |

|     |    |     |    |   |               |
|-----|----|-----|----|---|---------------|
| 702 | NA | 324 | NA | 0 | entrenamiento |
| 703 | NA | 225 | NA | 0 | entrenamiento |
| 704 | NA | 900 | NA | 0 | prueba        |
| 705 | NA | 225 | NA | 0 | entrenamiento |
| 706 | NA | 100 | NA | 0 | prueba        |
| 707 | NA | 0   | NA | 0 | prueba        |
| 708 | NA | 0   | NA | 0 | entrenamiento |
| 709 | NA | 16  | NA | 0 | prueba        |
| 710 | NA | 0   | NA | 0 | prueba        |
| 711 | NA | 9   | NA | 0 | prueba        |
| 712 | NA | 400 | NA | 0 | entrenamiento |
| 713 | NA | 9   | NA | 0 | entrenamiento |
| 714 | NA | 1   | NA | 0 | prueba        |
| 715 | NA | 25  | NA | 0 | prueba        |
| 716 | NA | 49  | NA | 0 | entrenamiento |
| 717 | NA | 36  | NA | 0 | prueba        |
| 718 | NA | 4   | NA | 0 | entrenamiento |
| 719 | NA | 0   | NA | 0 | prueba        |
| 720 | NA | 100 | NA | 0 | prueba        |
| 721 | NA | 36  | NA | 0 | prueba        |
| 722 | NA | 16  | NA | 0 | entrenamiento |
| 723 | NA | 64  | NA | 0 | entrenamiento |
| 724 | NA | 324 | NA | 0 | prueba        |
| 725 | NA | 49  | NA | 0 | prueba        |
| 726 | NA | 225 | NA | 0 | entrenamiento |
| 727 | NA | 49  | NA | 0 | prueba        |
| 728 | NA | 64  | NA | 0 | prueba        |
| 729 | NA | 64  | NA | 0 | prueba        |
| 730 | NA | 9   | NA | 0 | prueba        |
| 731 | NA | 100 | NA | 0 | prueba        |
| 732 | NA | 81  | NA | 0 | prueba        |
| 733 | NA | 576 | NA | 0 | prueba        |
| 734 | NA | 144 | NA | 0 | prueba        |
| 735 | NA | 4   | NA | 0 | entrenamiento |
| 736 | NA | 36  | NA | 0 | prueba        |
| 737 | NA | 324 | NA | 0 | prueba        |
| 738 | NA | 289 | NA | 0 | entrenamiento |
| 739 | NA | 49  | NA | 0 | prueba        |
| 740 | NA | 36  | NA | 0 | entrenamiento |
| 741 | NA | 100 | NA | 0 | prueba        |
| 742 | NA | 25  | NA | 0 | prueba        |
| 743 | NA | 49  | NA | 0 | prueba        |
| 744 | NA | 121 | NA | 0 | entrenamiento |

|     |    |     |    |   |               |
|-----|----|-----|----|---|---------------|
| 745 | NA | 196 | NA | 0 | prueba        |
| 746 | NA | 25  | NA | 0 | prueba        |
| 747 | NA | 4   | NA | 0 | entrenamiento |
| 748 | NA | 16  | NA | 0 | prueba        |
| 749 | NA | 25  | NA | 0 | entrenamiento |
| 750 | NA | 196 | NA | 0 | prueba        |
| 751 | NA | 16  | NA | 0 | entrenamiento |
| 752 | NA | 225 | NA | 0 | entrenamiento |
| 753 | NA | 144 | NA | 0 | entrenamiento |

Una vez creados los subconjuntos procedemos a crear la función para los modelos de dos partes

Primero los modelos binarios

```
# Parte 1 y=0 e y=1

modelo.logistico<-glm(fm("d_hours", xvars),
                      mroz,
                      subset = mroz$sample=="entrenamiento",
                      family = binomial(link = logit))

modelo.probit<-glm(fm("d_hours", xvars),
                  mroz,
                  subset = mroz$sample=="entrenamiento",
                  family = binomial(link = probit))

# Mirada a la primer parte

stargazer(modelo.logistico, modelo.probit,
           type = "text")
```

```
=====
                        Dependent variable:
-----
                        d_hours
                        logistic      probit
                        (1)           (2)
-----
nwifeinc                -0.015       -0.008
                        (0.012)       (0.007)
```

|          |                      |                      |
|----------|----------------------|----------------------|
| educ     | 0.219***<br>(0.061)  | 0.125***<br>(0.036)  |
| exper    | 0.176***<br>(0.050)  | 0.108***<br>(0.028)  |
| expersq  | -0.002<br>(0.002)    | -0.001<br>(0.001)    |
| age      | -0.069***<br>(0.020) | -0.043***<br>(0.012) |
| kidslt6  | -1.367***<br>(0.271) | -0.832***<br>(0.158) |
| kidsge6  | 0.199*<br>(0.107)    | 0.111*<br>(0.063)    |
| Constant | -0.649<br>(1.234)    | -0.264<br>(0.728)    |

```
-----
Observations      368      368
Log Likelihood    -193.555  -193.379
Akaike Inf. Crit.  403.110  402.759
=====
```

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

```
# Parte 2: ajuste de y>0

modelo.MCO<-lm(fm("hours", xvars),
               mroz,
               subset = (mroz$hours>0 & mroz$sample=="entrenamiento"))

modelo.loghours<-lm(fm("loghours", xvars),
                   mroz,
                   subset = (mroz$hours>0 & mroz$sample=="entrenamiento"))

modelo.gamma<-glm(fm("hours", xvars),
                  mroz,
                  subset = (mroz$hours>0 & mroz$sample=="entrenamiento"),
                  family = Gamma(link = log))
```

```
# Mirada de los modelos de la segunda parte

stargazer(modelo.MCO, modelo.loghours, modelo.gamma,
           type = "text")
```

| =====        |                     |           |            |
|--------------|---------------------|-----------|------------|
|              | Dependent variable: |           |            |
|              | -----               |           |            |
|              | hours               | loghours  | hours      |
|              | OLS                 | OLS       | glm: Gamma |
|              |                     |           | link = log |
|              | (1)                 | (2)       | (3)        |
| -----        |                     |           |            |
| nwifeinc     | 1.517               | -0.004    | 0.001      |
|              | (4.919)             | (0.007)   | (0.004)    |
| educ         | -33.565             | -0.054    | -0.025     |
|              | (24.392)            | (0.033)   | (0.021)    |
| exper        | 32.262              | 0.064**   | 0.031*     |
|              | (20.821)            | (0.028)   | (0.018)    |
| expersq      | 0.138               | -0.001    | -0.0001    |
|              | (0.590)             | (0.001)   | (0.001)    |
| age          | -23.083***          | -0.035*** | -0.018**   |
|              | (8.645)             | (0.012)   | (0.007)    |
| kidslt6      | -264.711**          | -0.649*** | -0.255**   |
|              | (134.212)           | (0.180)   | (0.115)    |
| kidsge6      | -32.935             | -0.037    | -0.022     |
|              | (42.712)            | (0.057)   | (0.037)    |
| Constant     | 2,311.710***        | 8.484***  | 7.900***   |
|              | (526.725)           | (0.708)   | (0.451)    |
| -----        |                     |           |            |
| Observations | 211                 | 211       | 211        |
| R2           | 0.155               | 0.187     |            |

|                                |          |          |            |
|--------------------------------|----------|----------|------------|
| Adjusted R2                    | 0.126    | 0.159    |            |
| Log Likelihood                 |          |          | -1,710.120 |
| Akaike Inf. Crit.              |          |          | 3,436.239  |
| Residual Std. Error (df = 203) | 751.978  | 1.010    |            |
| F Statistic (df = 7; 203)      | 5.332*** | 6.672*** |            |

=====

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Usando estos modelos podemos predecir las horas medias de  $y$ , dada un conjunto de covariables  $\mathbf{X}$  de la siguiente forma:

$$E(y|\mathbf{x}) = Pr(y > 0|\mathbf{x}) \times E(y|y > 0, \mathbf{x})[1]$$

El primer término se puede estimar usando la regresión binomial (logit o probit). El segundo término se estima si el  $E(y)$  se modela directamente. Por ejemplo, en un **GLM gamma** con un enlace del registro, modelamos las horas medias trabajadas.

$$\log(E[y]) = \mathbf{x} [2]$$

Donde  $\beta$  es un vector de coeficientes y hemos suprimidos su dependencia de  $E[y]$  en  $\mathbf{x}$ . Por lo tanto, podemos obtener la media de horas trabajadas simplemente exponenciando  $\log(E[y])$ . Sin embargo, con la regresión MCO transformada de forma logarítmica se dificulta un poco más, pues estamos modelando la media de horas trabajadas logarítmicas

$$E[\log(y)] = \mathbf{x} [3]$$

Y el  $E[e^{\log(Y)}] \neq e^{E[\log(y)]}$ . Sin embargo, podemos estimar las horas medias trabajadas si el termino de error es:  $\epsilon = \log(y) - \mathbf{x}$ , se distribuye de forma normal con varianza constante (**homocedástica**),  $\sigma^2$ . Luego, usando las propiedades de la distribución lognormal:

$$E(y|y > 0) = e^{(\mathbf{x} + \sigma^2/2)} [4]$$

Con esto en mente, podemos predecir de la siguiente forma

```
phat<-predict(modelo.logistico,
               mroz,
               part=mroz$sample=="prueba",
               type="response")

phatP<-predict(modelo.probit,
               mroz,
               part=mroz$sample=="prueba",
```

```

type="response")

pred <- data.table(hours=mroz$hours, muestra=mroz$sample)

pred$MCO<-phat*predict(modelo.MCO,
                        mroz,
                        part=mroz$sample=="prueba")

pred$MCOP<-phatP*predict(modelo.MCO,
                         mroz,
                         part=mroz$sample=="prueba")

pred$logMCO<-phat*exp(predict(modelo.loghours,
                              mroz))
pred$logMCOP<-phatP*exp(predict(modelo.loghours,
                                mroz))

pred$Gamma <- phat*predict(modelo.gamma,
                           mroz,
                           part=mroz$sample=="prueba",
                           type="response")
pred$GammaP <- phatP*predict(modelo.gamma,
                             mroz,
                             part=mroz$sample=="prueba",
                             type="response")

pred %>%
  print()

```

|      | hours | muestra       | MCO      | MCOP     | logMCO   | logMCOP  | Gamma    | GammaP   |
|------|-------|---------------|----------|----------|----------|----------|----------|----------|
|      | <int> | <char>        | <num>    | <num>    | <num>    | <num>    | <num>    | <num>    |
| 1:   | 1610  | prueba        | 842.2832 | 845.7954 | 547.2883 | 549.5704 | 796.5189 | 799.8403 |
| 2:   | 1656  | entrenamiento | 944.9746 | 947.5054 | 734.8612 | 736.8293 | 921.3644 | 923.8320 |
| 3:   | 1980  | prueba        | 907.1888 | 895.0672 | 546.1152 | 538.8181 | 863.1135 | 851.5808 |
| 4:   | 456   | prueba        | 934.9033 | 926.8364 | 737.0331 | 730.6736 | 924.9062 | 916.9256 |
| 5:   | 1568  | entrenamiento | 573.8992 | 571.2158 | 287.1518 | 285.8092 | 545.8928 | 543.3404 |
| ---  |       |               |          |          |          |          |          |          |
| 749: | 0     | entrenamiento | 616.9515 | 619.1704 | 382.7195 | 384.0960 | 606.3541 | 608.5349 |
| 750: | 0     | prueba        | 456.6050 | 451.2860 | 190.5000 | 188.2808 | 421.1919 | 416.2853 |
| 751: | 0     | entrenamiento | 415.0050 | 423.0071 | 273.9361 | 279.2181 | 409.6471 | 417.5459 |
| 752: | 0     | entrenamiento | 476.2147 | 481.7379 | 290.1237 | 293.4886 | 475.6698 | 481.1867 |

753:        0 entrenamiento 974.0258 984.2323 815.3055 823.8488 969.1396 979.2949

Evaluaremos el ajuste del modelo utilizando el error cuadrático medio (RMSE). El RMSE es simplemente la raíz cuadrado del error cuadrado medio (MPE), que tiene una buena interpretación porque puede descomponerse en la suma de la varianza y el sesgo al cuadrado de la predicción

```
RMSE<-function(x,y) sqrt(mean((y-x)^2, na.rm=T))

rmse<-c(round(RMSE(pred$hours, pred$MCO),digits = 2),
        round(RMSE(pred$hours, pred$logMCO),digits = 2),
        round(RMSE(pred$hours, pred$Gamma), digits = 2),
        round(RMSE(pred$hours, pred$MCOP), digits = 2),
        round(RMSE(pred$hours, pred$logMCOP), digits = 2),
        round(RMSE(pred$hours, pred$GammaP), digits = 2))

names(rmse)<-c("MCO", "Log-MCO", "Gamma", "MCOP", "Log-MCOP", "GammaP")

print(rmse)
```

| MCO    | Log-MCO | Gamma  | MCOP   | Log-MCOP | GammaP |
|--------|---------|--------|--------|----------|--------|
| 746.59 | 767.67  | 746.78 | 746.50 | 767.24   | 746.70 |

El modelo **logarítmico MCO** funciona peor, debido al problema de la retransformación. Los modelos **MCO** y **Gamma** producen resultados similares y el modelo MCO en realidad funciona mejor. Esto muestra que MCO es un estimador razonable de la expectativa condicional incluso cuando los errores claramente no están distribuidos normalmente.

La principal dificultad con los MCO transformados logarítmicamente es que la retransformación no es válida si los errores no se distribuyen normalmente con una varianza constante. Sin embargo, el supuesto de normalidad, los horas trabajadas esperadas están dadas por:

$$E[y|y > 0] = \exp(\mathbf{x}) \times E[\exp(\epsilon)|\mathbf{x}][5]$$

## 8.5 Simulación Predictiva

Nos hemos centrado en estimar las horas medias trabajadas, por lo que la distribución del término de error no ha sido tan importante. En otros casos, podríamos querer construir intervalos de predicción o simular la distribución completa de las horas trabajadas para una nueva población.



Aquí usaremos la simulación para comparar las predicciones de los modelos con los datos observados. [Andrew Gelman y Jennifer Hill](#) se refieren a este tipo de simulación como simulación predictiva.

Consideraremos seis modelos de dos partes para las horas de trabajo femenino: un modelo logístico-normal, un modelo logístico-lognormal y un modelo logístico-gamma, mas los tres para Probit. Para los modelos normal y lognormal supondremos que el término de error es constante entre los individuos. Tanto la distribución lognormal como la gamma tienen la propiedad deseable de que la varianza es proporcional al cuadrado de la media.

Comencemos simulando datos del modelo logístico-normal

```
n<-nrow(mroz)

d <- rbinom(n,1,phat)

y.norm<-d*rnorm(n,
                pred$MCO,
                summary(modelo.MCO)$sigma)
```

Usamos un procedimiento de simulación similar para el modelo logístico-lognormal

```
y.lognormal<-d*rlnorm(n,
                      pred$logMCO,
                      summary(modelo.loghours)$sigma)
```

Para simular datos de una distribución gamma, es necesario estimar un parámetro de forma,  $a_i$ , y un parámetro de tasa,  $b_i$ , para cada mujer. Supondremos que el parámetro de forma es constante en todas las observaciones, lo que implica que  $E(Y_i) = \mu_i = a/b_i$ . R usa métodos de momentos para estimar el parámetro de dispersión, que es el inverso del parámetro de forma, en un GLM gamma. Mediante programación, divide la suma de los residuos de “trabajo” al cuadrado por el número de grados de libertad en el modelo.

```
res <- modelo.gamma$residuals

c(sum(res^2/modelo.gamma$df.residual), summary(modelo.gamma)$dispersion)
```

```
[1] 0.4152545 0.4152545
```

Preferiríamos estimar el parámetro de forma utilizando la máxima verosimilitud. Podemos hacer esto usando la función *gamma.shape* del paquete MASS. Con el parámetro de forma en la mano, podemos estimar el parámetro de tasa como  $\hat{b}_i = \hat{a}/\hat{\mu}_i$  donde  $\hat{\mu}_i$  es la media predicha

para la mujer  $i$ . Con estas estimaciones de máxima verosimilitud, podemos simular las horas usando el modelo logístico-gamma.

```
library(MASS)
```

Adjuntando el paquete: 'MASS'

The following object is masked from 'package:dplyr':

```
select
```

The following object is masked from 'package:wooldridge':

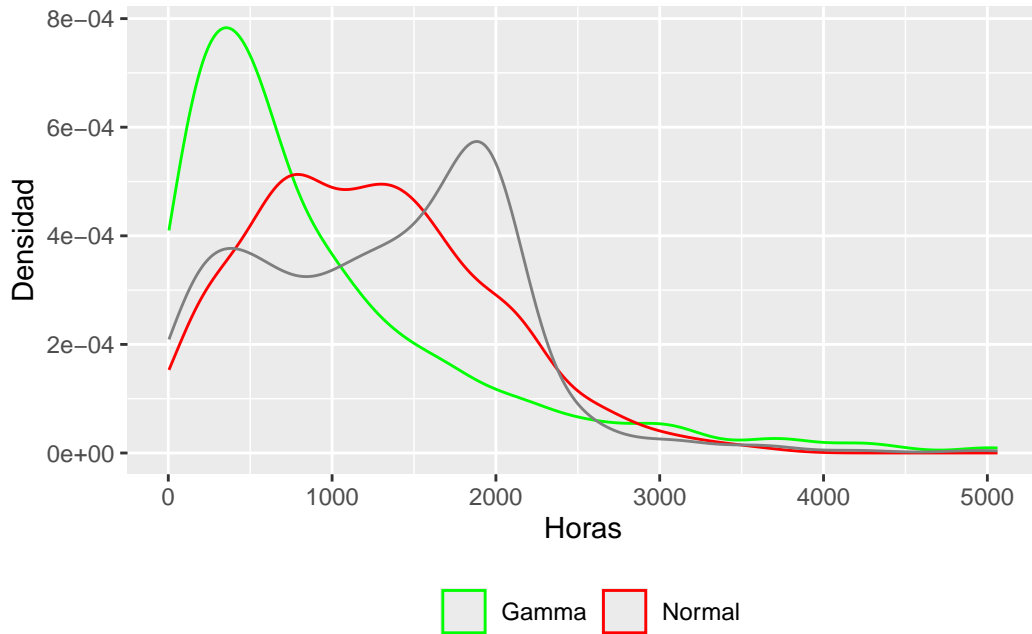
```
cement
```

```
a<-gamma.shape(modelo.gamma)$alpha  
b<-a/pred$Gamma  
y.gamma<-d*rgamma(n, shape = a, rate = b)
```

Ahora miremos que tan bien se ajustan nuestros modelos a datos observados

```
y<-mroz$hours  
p.hat<-data.table(y=c(y, y.norm, y.lognormal, y.gamma),  
                  lab=c(rep("Observado",n),  
                        rep("Normal",n),  
                        rep("lognormal",n),  
                        rep("Gamma",n)))  
ggplot(p.hat[p.hat$y>0 & p.hat$y<10000], aes(x=y, col=lab))+  
  geom_density(kernel="gaussian")+  
  xlab("Horas")+  
  ylab("Densidad")+  
  theme(legend.position = "bottom")+  
  labs(col="")+  
  scale_color_manual(values = c(Observado="black",
```

```
Normal="red",
Lognormal="blue",
Gamma="green"))
```



Como era de esperar el modelo logit-normal funciona cercanamente bien, junto con gamma, pero el modelo que ajusta de forma terribel es lognormal no aparece

También podemos comparar los cuartiles de las distribuciones simuladas con el cuartil de los datos observados

```
MySum <- function(x){
  q <- c(.30, .5, .75, .9, .95, .98)
  dat <- c(100 * mean(x == 0, na.rm = TRUE),
          min(x, na.rm = TRUE), quantile(x, probs = q, na.rm = TRUE),
          max(x, na.rm = TRUE))
  names(dat) <- c("Porcentaje_Cero", "Min", paste0("Q", 100 * q), "Max")
  return(round(dat, 0))
}
sumstats <- rbind(MySum(y), MySum(y.norm),
                  MySum(y.lognormal), MySum(y.gamma))
rownames(sumstats) <- c("Observado", "Normal", "Lognormal", "Gamma")
print(sumstats)
```

|           | Porcentaje_Cero | Min   | Q30 | Q50           | Q75  | Q90  | Q95  | Q98  | Max  |
|-----------|-----------------|-------|-----|---------------|------|------|------|------|------|
| Observado | 43              | 0     | 0   | 2.880000e+02  | 1516 | 1984 | 2094 | 2500 | 4950 |
| Normal    | 43              | -1301 | 0   | 0.000000e+00  | 1151 | 1822 | 2163 | 2546 | 3623 |
| Lognormal | 39              | 0     | 0   | 1.085114e+119 | Inf  | Inf  | Inf  | Inf  | Inf  |
| Gamma     | 43              | 0     | 0   | 1.590000e+02  | 724  | 1622 | 2259 | 3121 | 5062 |

## References

- Stock, James H, and Marck M. Watson. 2012. *Introducción a la econometría*. Madrid (España): Pearson. <http://www.ebooks7-24.com/?il=3445>.
- Wooldridge, Jeffrey M. 2009. *Introductory econometrics: a modern approach*. 4th ed. Mason, OH: South Western, Cengage Learning.