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Weibull Peak Modified Shifted With Offset

$$y = a * \exp(-0.5 * (\ln((x-e)/b)/c)^{d}) + Offset$$

Sun Dec 11 15:50:48 2011 local server time

Coefficients

$y = a * \exp(-0.5 * (\ln((x-e)/b)/c)^d) + Offset$

Fitting target of sum of squared absolute error = 3.5167333673601849E+06

a = -1.1448557272986259E+05

b = 1.7116920714503912E+00

c = 9.9455703268775757E+00

d = 1.2040212751162155E+01

e = 1.2472883079280314E+03

Offset = 1.1854433036504488E+05

Coefficient and Fit Statistics

From scipy.odr.odrpack and http://www.scipy.org/Cookbook/OLS

Degrees of freedom (error): 36.0
Degrees of freedom (regression): 5.0
R-squared: 0.999921325482
R-squared adjusted: 0.999910398465
Model F-statistic: 91509.089445
Model F-statistic p-value: 1.11022302463e-16
Model log-likelihood: -297.638261428
AIC: 14.4589648299
BIC: 14.7072033468
Root Mean Squared Error (RMSE): 289.364384197

a = -1.1448557272986259E+05
       std err squared: NAN
       t-stat: NAN
       p-stat: 2.00000E+00
       95% confidence intervals: [NAN, NAN]
b = 1.7116920714503912E+00
       std err squared: NAN
       t-stat: NAN
       p-stat: 2.00000E+00
       95% confidence intervals: [NAN, NAN]
c = 9.9455703268775757E+00
       std err squared: NAN
       t-stat: NAN
       p-stat: 2.00000E+00
       95% confidence intervals: [NAN, NAN]
d = 1.2040212751162155E+01
       std err squared: NAN
       t-stat: NAN
       p-stat: 2.00000E+00
       95% confidence intervals: [NAN, NAN]
e = 1.2472883079280314E+03
       std err squared: NAN
       t-stat: NAN
       p-stat: 2.00000E+00
       95% confidence intervals: [NAN, NAN]
Offset = 1.1854433036504488E+05
       std err squared: NAN
       t-stat: NAN
       p-stat: 2.00000E+00
       95% confidence intervals: [NAN, NAN]

Coefficient Covariance Matrix
[nan nan nan nan nan nan]
[nan nan nan nan nan nan]
[nan nan nan nan nan nan]
[nan nan nan nan nan nan]
[nan nan nan nan nan nan]
[nan nan nan nan nan nan]

Error Statistics

	Absolute Error	Relative Error
Minimum:	-4.803855E+02	-2.807528E-02
Maximum:	8.656312E+02	9.377437E-02
Mean:	8.631255E-01	5.904360E-04
Std. Error of Mean:	4.519092E+01	2.486401E-03
Median:	-4.359380E+01	-5.040024E-04
Variance:	8.373100E+04	2.534697E-04
Standard Deviation:	2.893631E+02	1.592073E-02
Pop. Variance (N-1):	8.373100E+04	2.534697E-04
Pop. Std Dev (N-1):	2.893631E+02	1.592073E-02
Variation:	3.352503E+02	2.696437E+01
Skew:	6.716502E-01	4.556341E+00
Kurtosis:	3.711256E-01	2.528270E+01

Data Statistics

	X	Y
Minimum:	1.249000E+03	4.176000E+03
Maximum:	3.981940E+05	1.186820E+05
Mean:	1.095384E+05	8.415040E+04
Std. Error of Mean:	1.161884E+04	5.094882E+03
Median:	1.044960E+05	9.783600E+04
Variance:	5.534893E+09	1.064271E+09
Standard Deviation:	7.439686E+04	3.262317E+04
Pop. Variance (N-1):	5.534893E+09	1.064271E+09
Pop. Std Dev (N-1):	7.439686E+04	3.262317E+04
Variation:	6.791855E-01	3.876769E-01
Skew:	1.235739E+00	-1.033505E+00
Kurtosis:	3.190010E+00	-1.352980E-01

Source Code in C++

```
// To the best of my knowledge this code is correct.
// If you find any errors or problems please contact
// me at zunzun@zunzun.com.
//      James


#include

// sum of squared absolute error

double WeibullPeak_ModifiedShifted2D_model(double x_in)
{
    double temp;
    temp = 0.0;

    // coefficients
    double a = -1.1448557272986259E+05;
    double b = 1.7116920714503912E+00;
    double c = 9.9455703268775757E+00;
    double d = 1.2040212751162155E+01;
    double e = 1.2472883079280314E+03;
    double Offset = 1.1854433036504488E+05;

    temp = a * exp(-0.5 * pow(log((x_in-e)/b) / c, d));
    temp = temp + Offset;
    return temp;
}
```

Source Code in Java

```
// To the best of my knowledge this code is correct.
// If you find any errors or problems please contact
// me at zunzun@zunzun.com.
//      James


import java.lang.Math;

// sum of squared absolute error

class WeibullPeak_ModifiedShifted2D
{
    double WeibullPeak_ModifiedShifted2D_model(double x_in)
    {
        double temp;
        temp = 0.0;

        // coefficients
        double a = -1.1448557272986259E+05;
        double b = 1.7116920714503912E+00;
        double c = 9.9455703268775757E+00;
        double d = 1.2040212751162155E+01;
        double e = 1.2472883079280314E+03;
        double Offset = 1.1854433036504488E+05;

        temp = a * Math.exp(-0.5 * Math.pow(Math.log((x_in-e)/b) / c, d));
        temp = temp + Offset;
        return temp;
    }
}
```

Source Code in Python

```
# To the best of my knowledge this code is correct.
# If you find any errors or problems please contact
# me at zunzun@zunzun.com.
#      James


import math

# sum of squared absolute error

def WeibullPeak_ModifiedShifted2D_model(x_in):
    temp = 0.0

    # coefficients
    a = -1.1448557272986259E+05
    b = 1.7116920714503912E+00
    c = 9.9455703268775757E+00
    d = 1.2040212751162155E+01
    e = 1.2472883079280314E+03
    Offset = 1.1854433036504488E+05

    temp = a * math.exp(-0.5 * math.pow(math.log((x_in-e)/b) / c, d))
    temp = temp + Offset
    return temp
```

Source Code in C#

```
// To the best of my knowledge this code is correct.
// If you find any errors or problems please contact
// me at zunzun@zunzun.com.
//      James


using System;

// sum of squared absolute error

class WeibullPeak_ModifiedShifted2D
{
    double WeibullPeak_ModifiedShifted2D_model(double x_in)
    {
        double temp;
        temp = 0.0;

        // coefficients
        double a = -1.1448557272986259E+05;
        double b = 1.7116920714503912E+00;
        double c = 9.9455703268775757E+00;
        double d = 1.2040212751162155E+01;
        double e = 1.2472883079280314E+03;
        double Offset = 1.1854433036504488E+05;

        temp = a * Math.Exp(-0.5 * Math.Pow(Math.Log((x_in-e)/b) / c, d));
        temp = temp + Offset;
        return temp;
    }
}
```

Source Code in SCILAB

```
// To the best of my knowledge this code is correct.
// If you find any errors or problems please contact
// me at zunzun@zunzun.com.
//      James

// sum of squared absolute error

function y=WeibullPeak_ModifiedShifted2D_model(x_in)
    temp = 0.0

    // coefficients
    a = -1.1448557272986259E+05
    b = 1.7116920714503912E+00
    c = 9.9455703268775757E+00
    d = 1.2040212751162155E+01
    e = 1.2472883079280314E+03
    Offset = 1.1854433036504488E+05

    temp = a * exp(-0.5 * power(log((x_in-e)/b) / c, d))
    temp = temp + Offset

    y = temp
endfunction
```

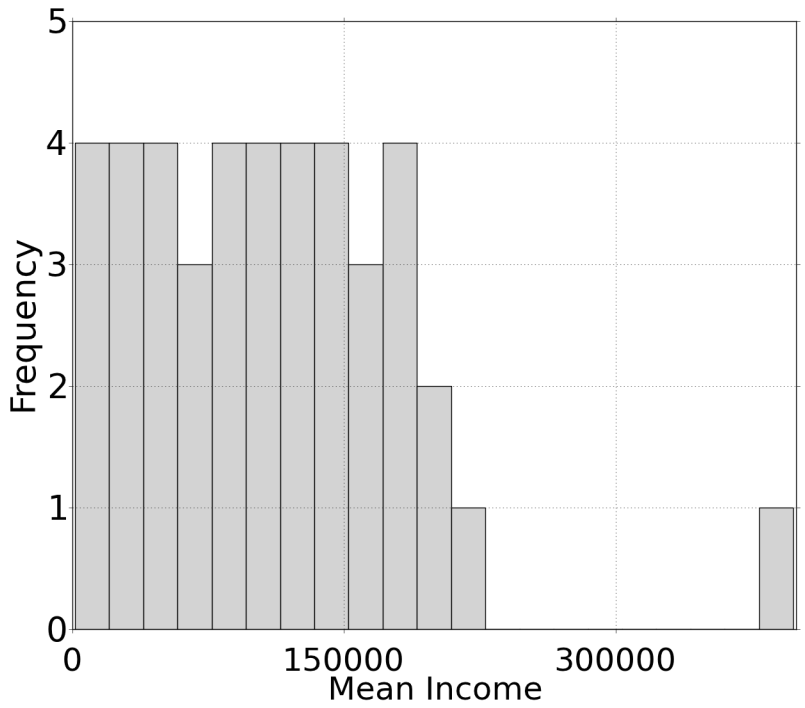
Source Code in MATLAB

```
% To the best of my knowledge this code is correct.
% If you find any errors or problems please contact
% me at zunzun@zunzun.com.
%      James

% sum of squared absolute error

function y=WeibullPeak_ModifiedShifted2D_model(x_in)
    temp = 0.0;

    % coefficients
    a = -1.1448557272986259E+05;
    b = 1.7116920714503912E+00;
    c = 9.9455703268775757E+00;
    d = 1.2040212751162155E+01;
    e = 1.2472883079280314E+03;
    Offset = 1.1854433036504488E+05;

    temp = a .* exp(-0.5 .* power(log((x_in-e)./b) ./ c, d));
    temp = temp + Offset;

    y = temp;
```

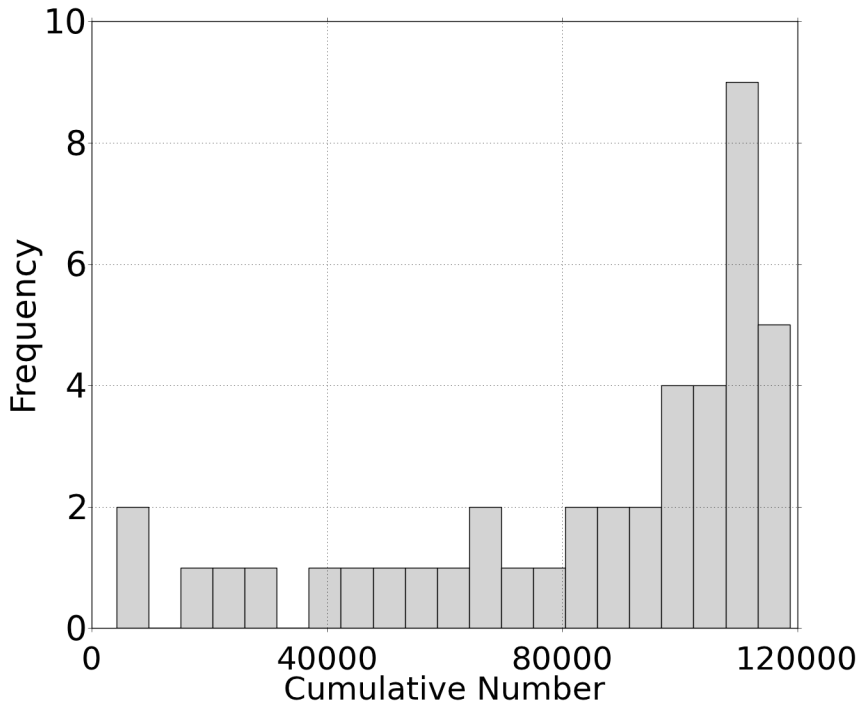
Source Code in VBA

```
' To the best of my knowledge this code is correct.
' If you find any errors or problems please contact
' me at zunzun@zunzun.com.
'      James


' sum of squared absolute error

Public Function WeibullPeak_ModifiedShifted2D_model(x_in)

    temp = 0.0

    ' coefficients
    a = -1.1448557272986259E+05
    b = 1.7116920714503912E+00
    c = 9.9455703268775757E+00
    d = 1.2040212751162155E+01
    e = 1.2472883079280314E+03
    Offset = 1.1854433036504488E+05

    temp = a * Exp(-0.5 * Application.WorksheetFunction.power(Application.WorksheetFunction.log((x_in-e)/b) / c, d))
    temp = temp + Offset
    WeibullPeak_ModifiedShifted2D_model = temp
End Function
```

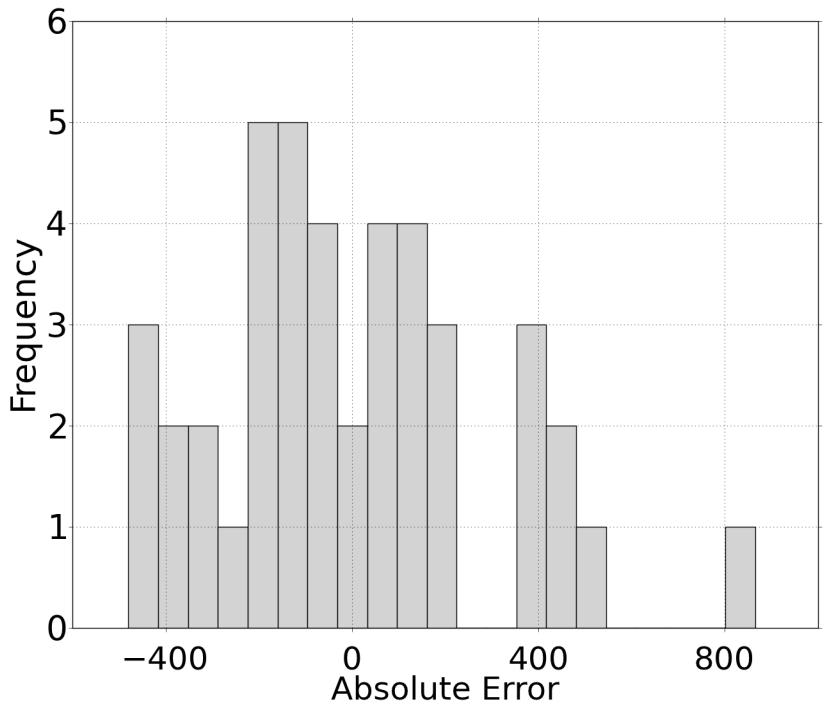
Histogram of Mean Income



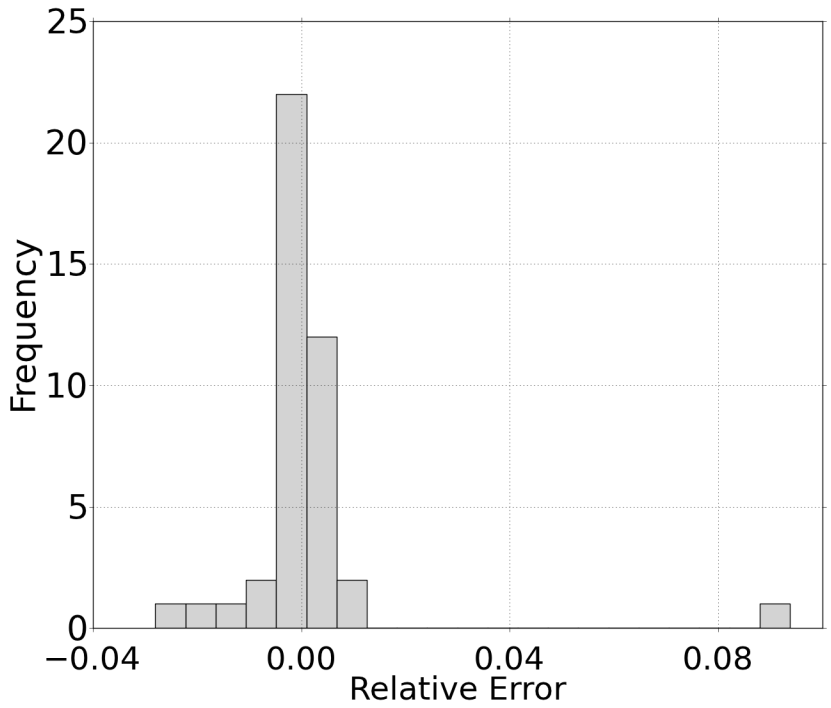
Histogram of Cumulative Number



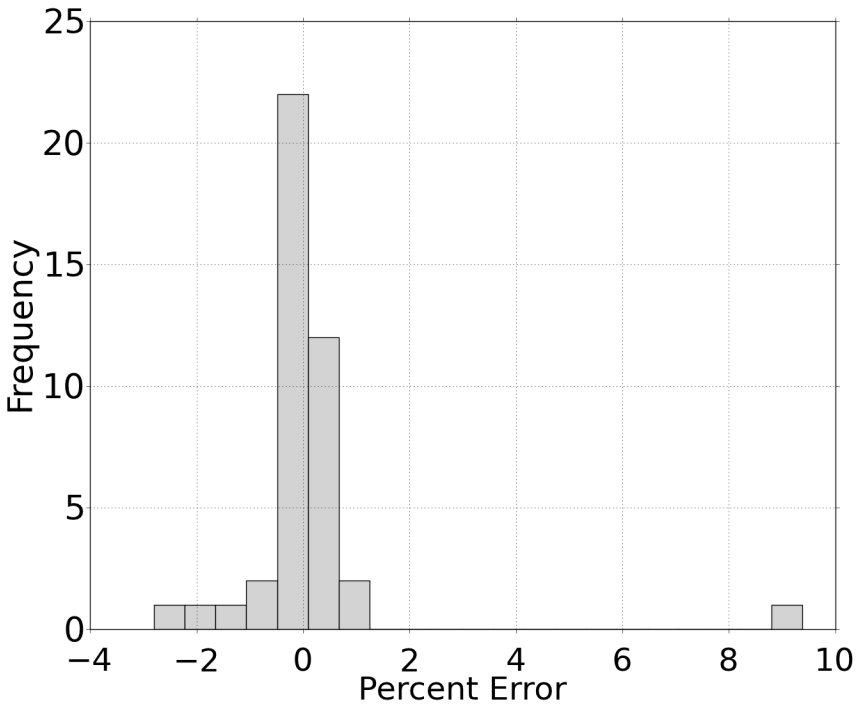
Histogram of Absolute Error



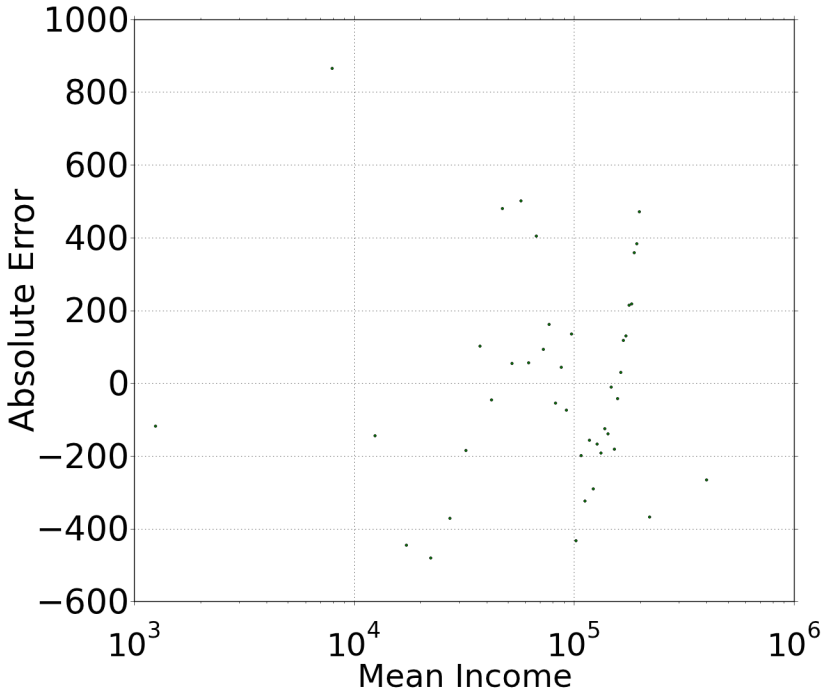
Histogram of Relative Error



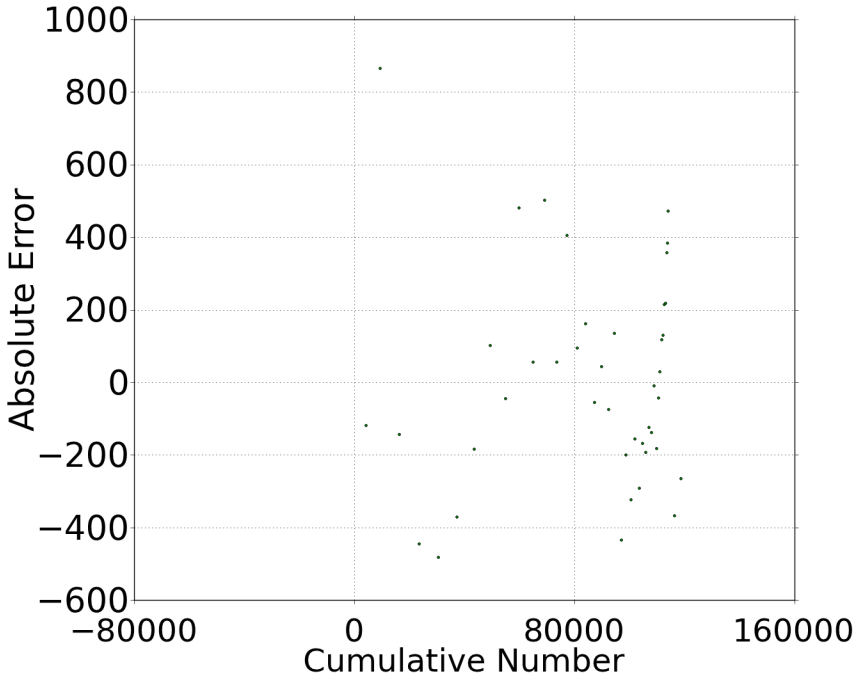
Histogram of Percent Error



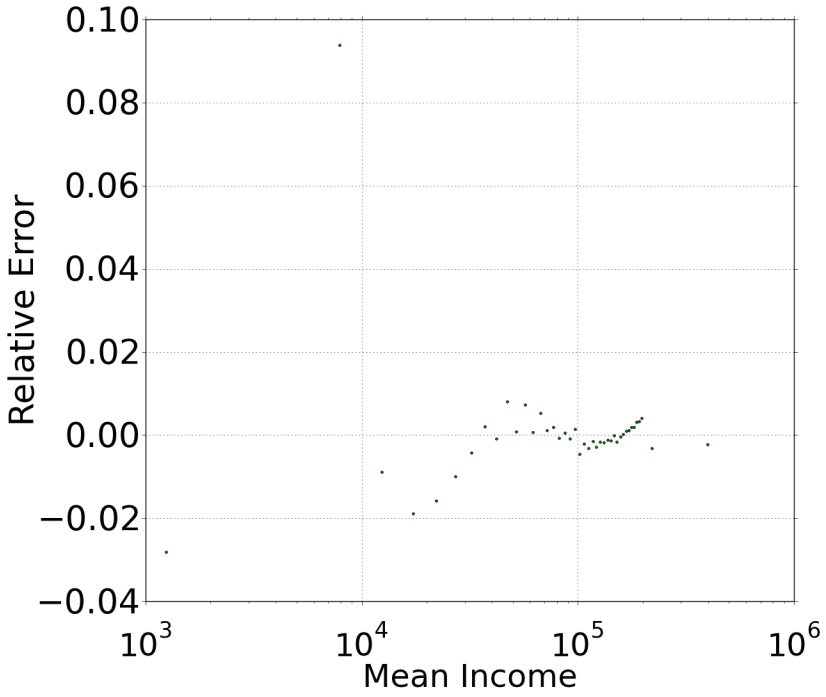
Absolute Error vs. Mean Income



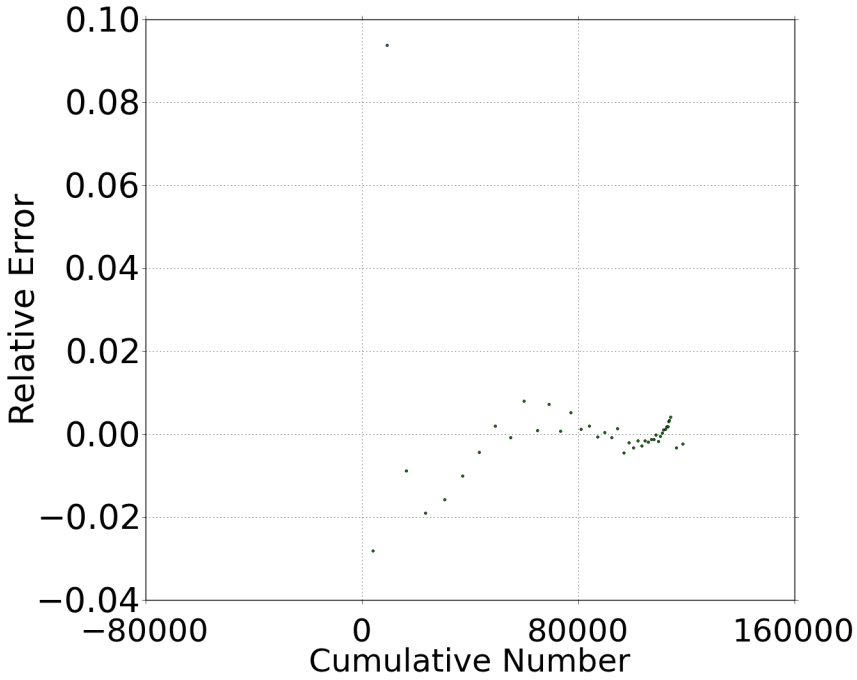
Absolute Error vs. Cumulative Number



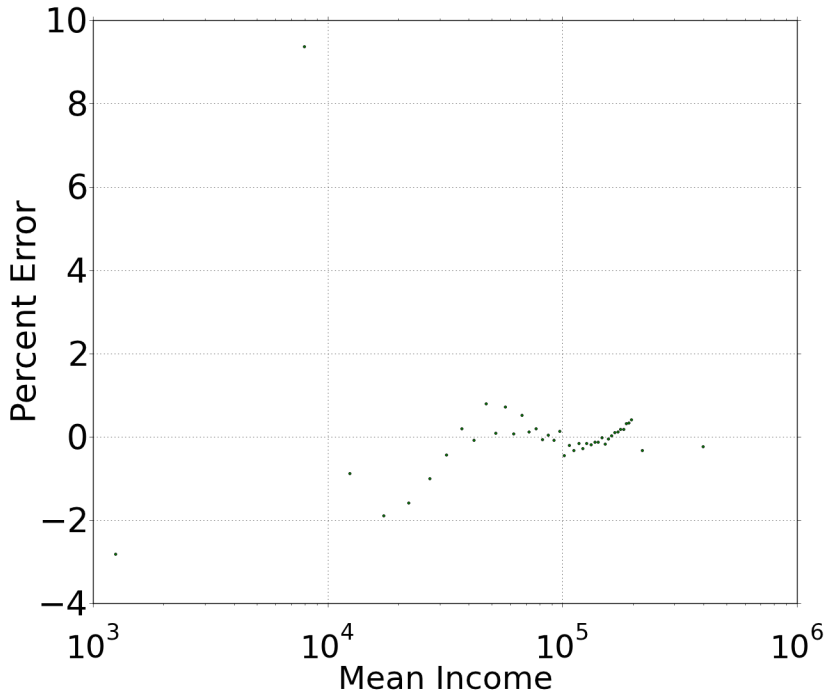
Relative Error vs. Mean Income



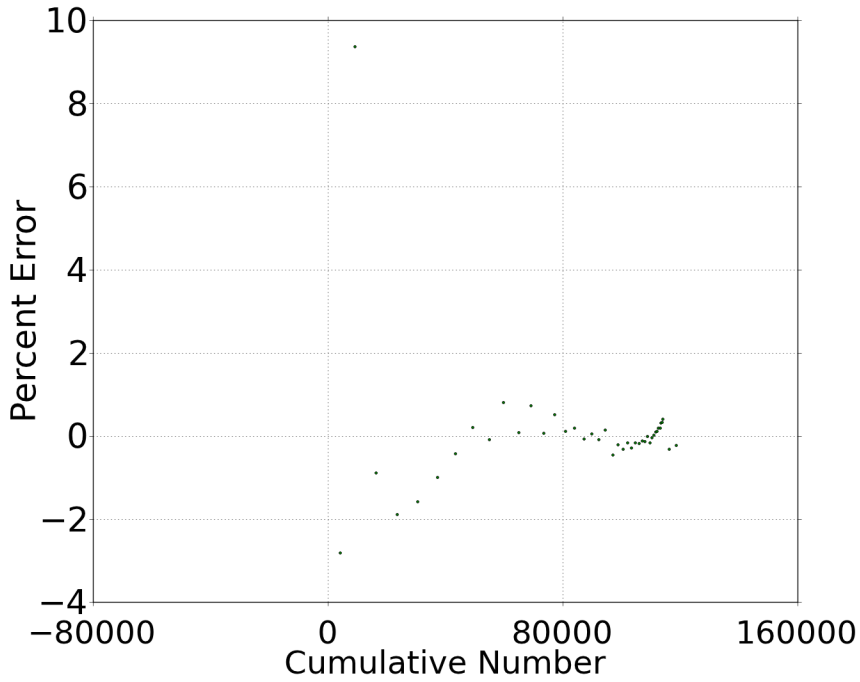
Relative Error vs. Cumulative Number



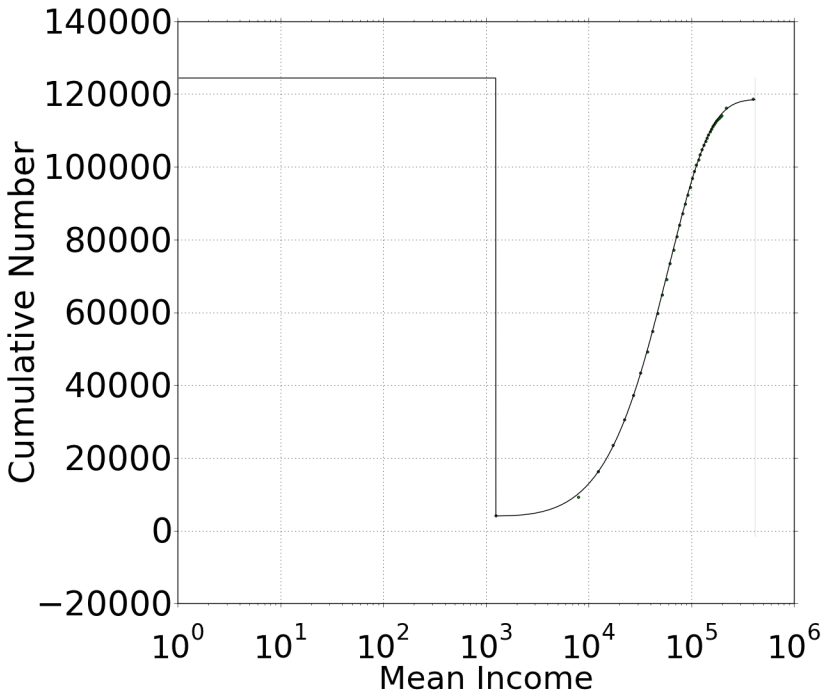
Percent Error vs. Mean Income



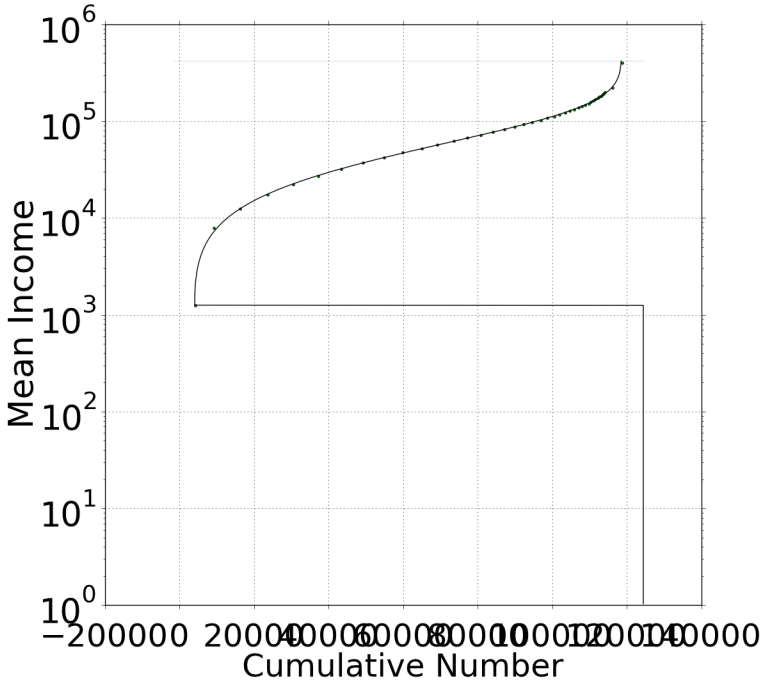
Percent Error vs. Cumulative Number



Cumulative Number vs. Mean Income with model



Mean Income vs. Cumulative Number with model



Jeremiah 20:11

But the LORD is with me as a mighty terrible one: therefore my persecutors shall stumble, and they shall not prevail: they shall be greatly ashamed; for they shall not prosper: their everlasting confusion shall never be forgotten.