Converting AHT to CRT using Session Level Data

Terms

$T_n = InboundTime$

$T_o = OutboundTime$

$N_n = NumberInboundCalls$

$N_o = NumberOutboundCalls$

Metrics

$$AHT = \frac{T_n}{N_n}$$

$$CRT = \frac{T_n + T_o}{N_n}$$

Therefore,

$$\mathbb{E}[CRT] = \mathbb{E}[AHT] + \mathbb{E}[T_o] * \frac{N_o}{N_n}$$

Meaning the effect on CRT is the effect on AHT times the ratio of inbound calls to outbound calls.

Run Regression to Calc $\mathbb{E}[AHT]$ and N_n

```
Query Start 2023-10-19 10:55:37 AM
Query End 2023-10-19 10:55:42 AM
```

OLS Regression Results

Dep. Variable:	HandleTime	**R-squared:**	0.067
Model:	OLS	**Adj. R-squared:**	0.067
Method:	Least Squares	**F-statistic:**	228.7
Date:	Thu, 19 Oct 2023	**Prob (F-statistic):**	1.68e-236
Time:	10:55:42	**Log-Likelihood:**	-1.3086e+05
No. Observations:	15897	**AIC:**	2.617e+05
Df Residuals:	15891	**BIC:**	2.618e+05
Df Model:	5		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
Weeks Ago	-12.7538	4.400	-2.899	0.004	-21.377	-4.130
ExpertAssistOnForThisUser	-42.3169	25.339	-1.670	0.095	-91.983	7.350
Constant	917.5001	21.454	42.765	0.000	875.447	959.553
TestGroup	61.8134	18.722	3.302	0.001	25.117	98.510
Offered	278.6803	15.177	18.362	0.000	248.932	308.429
Accepted	689.2504	29.170	23.629	0.000	632.073	746.427

Omnibus:	7618.385	**Durbin-Watson:**	1.982
Prob(Omnibus):	0.000	**Jarque-Bera (JB):**	60428.754
Skew:	2.154	**Prob(JB):**	0.00
Kurtosis:	11.525	**Cond. No.**	18.8

Notes:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.

```
Effect on AHT is -42.32 and Number Inbound =15,897
```

Run Regression to Calc $\mathbb{E}[T_o]$ and N_o

```
Query Start 2023-10-19 10:55:42 AM
Query End 2023-10-19 10:55:46 AM
```

OLS Regression Results

Dep. Variable:	ResolveTime	**R-squared:**	0.001
Model:	OLS	**Adj. R-squared:**	0.001
Method:	Least Squares	**F-statistic:**	5.192
Date:	Thu, 19 Oct 2023	**Prob (F-statistic):**	0.00558
Time:	10:55:46	**Log-Likelihood:**	-69045.
No. Observations:	8880	**AIC:**	1.381e+05
Df Residuals:	8877	**BIC:**	1.381e+05
Df Model:	2		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
Constant	289.1504	8.470	34.137	0.000	272.546	305.754
ExpertAssistOnForThisUser	-39.5329	17.675	-2.237	0.025	-74.181	-4.885
TestGroup	47.9146	15.032	3.187	0.001	18.448	77.382

Omnibus:	8452.585	**Durbin-Watson:**	1.971
Prob(Omnibus):	0.000	**Jarque-Bera (JB):**	552087.132
Skew:	4.491	**Prob(JB):**	0.00
Kurtosis:	40.569	**Cond. No.**	4.00

Notes:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.

```
Effect on Outbound Time is -39.53 and Number of Outbound Calls are 8,880
```

$$\mathbb{E}[CRT] = \mathbb{E}[AHT] + \mathbb{E}[T_o] * \frac{N_o}{N_n}$$

```
CRT=-64.40 = -42.32+-39.53*55.86%
```