An impact of unemployment rate on related Google search terms: an investigation in search of alternative indicator of unemployment

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Introduction

The COVID-19 pandemic is a global coronavirus disease pandemic categorized as an airborne high consequence infectious disease started in 2019. Thailand is also a part of this worldwide pandemic of coronavirus disease since the first case was identified on 13 january in 2020, and it has continued since then. Many countries including Thailand are trying to slow the spread of the disease by testing and treating patients, limiting travel, quarantining citizens, and canceling large gathering events such as sporting events, concerts, and schools. As COVID-19 cases spread over the world, many countries responded by closing schools, businesses, and international borders in an attempt to stop the virus from further spreading.

In fact, this COVID-19 pandemic is much more than a medical crisis. It destroyed both social and economic factors including disrupted income growth that increases inequality among countries across the world. Thailand's labor market is also one of the sectors that has been severely affected by the measures against the spread of Covid-19.

Taking a deeper look into the unemployment, The national unemployment rate is calculated as a percentage of the entire unemployed labor in the total labor force. It is mostly known as a key indicator of the performance of a country's labor market (Picardo, 2020). Before the pandemic, Thai unemployment rate used to be low as the World Bank in 2018 revealed that Thailand's unemployment rate is at 1.1% which was the 9th lowest out of 233 countries worldwide. However, the unemployment rate now jumped from 1.89% to 2.25% in the third quarter during the previous three months, while household debt continued to grow. (BLOOMBERG NEWS 2021)

This paper aim to study about the relationship between the unemployment rate and the search volume about how the unemployment rate affect the search volume from using the OLS regression and the search term from google trends since nowadays Thai unemployment rate are jump up high in this COVID-19 pandemic situation.

Literature review

Literature related to unemployment during Covid-19

- (Crozet, 2021) have forecasted that the economic crisis due to the Covid-19 pandemic will cause the global unemployment rate to increase to more than 200 million people in 2022. Further expanding on this topic, stating that women and youth in the labor force will be expected to be affected more than their counterparts, and Latin America and the Caribbean, Europe and Central Asia are the worst-affected regions Other than the economic crisis, the Covid-19 pandemic has resulted in a labor market crisis, which set back the progress of UN's work toward eradicating the working poverty, to the level of that in 2015.

- (Kochhar, 2020) has stated that the unemployment rate during the first 3 month of the Covid-19 pandemic has soared higher than that of the Great Recession which lasted for 2 years. From February 2020 the unemployed number in America rose from 6.2 million to

14 million in May, as a result the unemployment rate significantly increased from 3.8% to 13.0%. The unemployment rate has reached all time as of April 2020 at 14%, which surpasses the unemployment rate during the Great Recession in 1983 at 10.8%.

- (Theparat, 2021) had predicted that the unemployment rate of Thailand will reach 2.5%, a steep increase from 1.96% in the first quarter of 2021. This concern has been extended to the third quarter as the government has imposed strict Covid-19 measures as an attempt to reduce the number of Covid-19 infectious, this restrictive measure is expected to last until August 2021.

- (Kasikornresearch, 2020) announced that Greater Bangkok's unemployment rate in May 2020 has reached 9.6%, as workers lose their job as measures to reduce the number of Covid-19 infectious, such as lockdown measures, have prevented them from working. Kresearch has also predicted that the unemployment rate is likely to decrease in the second half of 2021, as the economy reopens, with the assumption that there will be no second wave of Covid-19 transmission.

Literature related to factor that affects unemployment rate during Covid-19

Education

- (Daly, 2020) has stated that Covid-19 has a more severe impact for American workers who do not have a college degree. Before the Covid-19 pandemic the unemployment rate gap between those with a high school diploma or less and those with a bachelor's degree or more was at 2.2%. As of May 2020, this gap has increased to 8.8%. Daly has also broken down the impact of the unemployment rate of each education level, stating that the loss of job for those with a bachelor's degree or higher is significantly less than their working-age population where the loss of job for those with a high school diploma or less is significantly higher than the working-age population.

  (Daly, 2020)have also stated that the job characteristics of those with different educational levels also plays a part in the increase in unemployment gap. Overall, when

comparing the education level of workers in telework and low contract work, those with bachelor's degree or higher work proportionally more in telework, which is a job that could transition to working from home unless low contract works.

Job type/industry

- (Vidovic, 2021) analyzes that the top 5 most affected industries are Airlines, leisure Facilities, Oil & Gas Drilling, Auto parts & Equipment and Restaurants, which is mostly due to the lockdown measure imposed. On the other hand, the 5 least affected industries are Specialized REITs, Property & Casualty Insurance, Multi-line Insurance, Life & Health Insurance and Industrial REITs.
- (Maurer, 2020) said that the Covid-19 pandemic has created a shift in the labor market, creating new jobs as the demand for safety-related jobs increased. This job includes health and safety stewards, health monitors, decontamination technicians and reconfiguration specialists.
- (Open Development Thailand, 2020) stated that the informal sector was hit the hardest, in particular, the market for vendors and small-scale traders. In addition, the decline in formal tourism and manufacturing have also affected the informal business that relies on these sectors. The Covid-19 has also resulted in the rise of the gig economy.

Income level

- (di Mauro, 2021) compared the level of earning and have come to the conclusion that the lowest earning quartile experienced the largest fall. The lower income group experienced the largest variation in income, while the middle and higher income group experienced a more stable income.
- (Buckley & Austin, 2021) explores the income inequality that resulted from the Covid-19 pandemic. Buckley has stated that the rise in income inequality is due to the loss in income for low-paying jobs is higher than that of high-wage earners.

Other literature related to methodology

- (Aaronson et al., 2021) uses Google Trends to analyze the elasticity of initial unemployment insurance (UI) by forecasting the initial UI claims with respect to the

intensity in Google search, at both state and national levels. From this it would result in the assessment of the level of uncertainty for the Covid-19 pandemic's out-of-sample predictions.

Limitation of the literature review

From the literature review, we have observed that there 3 main research gap, 1) identification of unemployment rate in relative to the Covid-19 waves, 2) the lack of variety of data used to identify the factors related to unemployment rate, and 3) the lack of research that focus on Thailand's analysis of unemployment rate derived from the factor that could result in unemployment. Majority of the paper is based on the updated data of unemployment rate, which then relates it to the Covid-19 pandemic, and breaking it down to the differentiation of the unemployment rate bases of different demographics. As such there is yet to be a paper that utilizes the use of Google Trends to analyze the unemployment rate in relation to the Covid-19 pandemic.

Data & Methodology

To identify the relationship among the google trends keywords, Thai unemployment rate, and the COVID-19 situation, this paper uses the data based on a time series from secondary data ranging between December 1, 2011 and December 1, 2020, monthly. This paper uses a wide range of data to study and analyse the index's trends and patterns to a different set of data including the conventional indicator from National Statistical Office from the Bank of Thailand, and the alternative indicator from search volume from google trend.

Table 1 : Source of data

Data	Source of data	Unit

Thai unemployment rate during 2011-2020	National Statistical Office from the Bank of Thailand	Percentage
Keyword search volume	Google trend	Percentage

First, this paper relocated the secondary data from Thai unemployment rate in the period of December 2011 to December 2020 into Microsoft Excel as a conventional indicator for further analysis. Meanwhile, we conducted multiple keywords search in the Google Trends in the light of unemployment person, for example,“หางาน”, “รับสมัคร”, “งาน part time”, “กู้ เงิน”, and other related keywords, and put it into the Microsoft Excel as a alternative indicator. Lastly, we normalize the raw data for the use of linear regression which will be provided in the appendix.

To answer the question, this paper will use the Ordinary Least Square Regression(OLS) linear regression analysis along with other secondary data both to sort out the unrelated keywords from the Google trends and find the relationship between conventional and alternative indicators by using the STATA program.

Ordinary Least Square Regression (OLS)

This is a common method for estimating and analysing coefficients of linear regression equations which describe the relationship between one or more independent variables and a dependent variable (simple or multiple linear regression)

General OLS regression model : $Yt = \alpha + \beta * Xt + \gamma * Di * Xt + Ui$

Where Yi = Dependent variable

α = Intercept of the model

β = Independent Variable Coefficient

γ = Dummy coefficient

X = Corresponds to i explanatory variable of the model

Di*Xt = Dummy slope

Ui = the random error with the expectation 0 and variance $\sigma 2$

Each variable represent different indicators as:

Y1t= Alternative data as an Google trend volume in keyword “คนตกงาน”

Y2t= Alternative data as an Google trend volume in keyword “หางาน”

Xt = Conventional data as an unemployment rate in Thailand - Unemploymentrate

Di = Binary Variable

$\{Di = 1\ for\ lockdown\ period,\ 0\ for\ non - lockdown\ period\}$

Di*Xt = Dummy slope variable - dumlockslope

U1= Error terms of the regression model.

Simple linear regression will be utilized for two different models with different dependent variables Y1 and Y2, but same independent variable X. This two models will allow us capture the impact an unemployment rate has upon the Google trend volume of the keyword "คนตกงาน" and "หางาน" through the magnitude and direction of β coefficient.

Moreover, to further investigate the possible shift in the relationship between those indicators mentioned above during the Covid-19 shock, this paper uses the slope dummy ($Di * Xt$) in the lockdown period to examine whether the unemployment rate effect on the Google trends volume is more pronounced during the lock-down period or not. By setting the value of dummy variable Di to be 1 during the lockdown period of 2020 which is from March 2020 to August 2020 and 0 for otherwise, this allows us to capture the impact that Non-pharmaceutical intervention or lockdown has upon the relationship of unemployment and key-word google trend during the lockdown period, as the γ if significant will imply magnitude of additional effect that unemployment rate can impose on google trend during the lockdown period.

Results

Table 2 : Model 1Regression output between X:Thai unemployment rate and Y:keyword "คนตกงาน"

Source	SS	df	MS		
Model	22.1814328	2	11.0907164	Number of obs	= 106
Residual	16.5213032	103	.160401002	F(2, 103)	= 69.14
				Prob > F	= 0.0000
Total	38.7027359	105	.368597485	R-squared	= 0.5731
				Adj R-squared	= 0.5648
				Root MSE	= .4005

คนตกงานไทย	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
unemploymentrate	.3484753	.0607825	5.73	0.000	.2279277	.469023
dumlockslope	.4263404	.0645909	6.60	0.000	.2982397	.5544411
_cons	-.0003461	.1397684	-0.00	0.998	-.2775437	.2768516

Table 3 : Model 2 Regression output between X:Thai unemployment rate and Y:keyword “หางาน”

Source	SS	df	MS	Number of obs	=	106
				F(2, 103)	=	9.51
Model	.891604333	2	.445802166	Prob > F	=	0.0002
Residual	4.82608625	103	.046855206	R-squared	=	0.1559
				Adj R-squared	=	0.1395
Total	5.71769058	105	.054454196	Root MSE	=	.21646

หางานไทย	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
unemploymentrate	.1421356	.0328514	4.33	0.000	.0769826	.2072886
dumlockslope	-.0504617	.0349097	-1.45	0.151	-.1196969	.0187735
_cons	1.108285	.0755413	14.67	0.000	.9584671	1.258104

From the regression output, the results contain the sample size 106 in the range of December 2011to 2020 in a monthly period between Thai unemployment rate and selected Google trends keywords which are “คนตกงาน” and “หางาน”. Table 2 shows that the F-test or overall test of the model and individual test of β have P-value less than 0.05, therefore this paper reject the null hypothesis of Thai unemployment rate do not has an effect on the search term of “คนตกงาน”, and has R-square equals to 0.49 which means that the conventional indicators, known as the unemployment rate, has a positive impact on the keyword mentioned above, as an increase in unemployment rate leads to an increase in the search volume for “คนตกงาน”. Also, for table 3, the overall test and individual test of positive β has the P-value Less than 0.05 which is also significant since it falls into the rejection region so the it can conclude that the keyword “หางาน” has been affected positively by the Thai unemployment rate.

However, the coefficient of the slope dummy in the Table 3 output is tested to be insignificant with P-value > 0.05, which means that even if there is lockdown situation from the COVID-19 prevention measures, the impact from unemployment rate to the search term still does not change. From my interpretation, it means that the unemployed people during this Covid-19 era may not seek job offers through the online platform but via onsite, offline or through networking and connection instead. On the other hand, they may not have enough technological knowledge to find job opportunities on the internet.

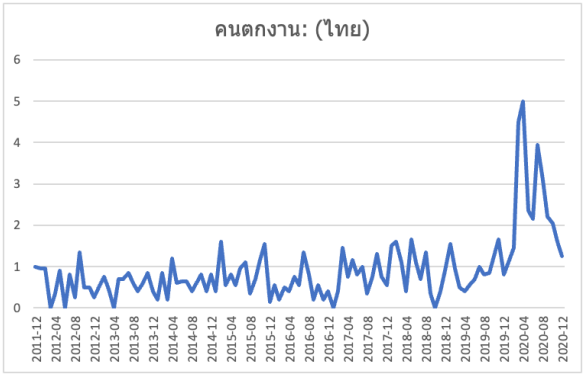

Figure 1: Trend of Keyword “คนตกงาน”

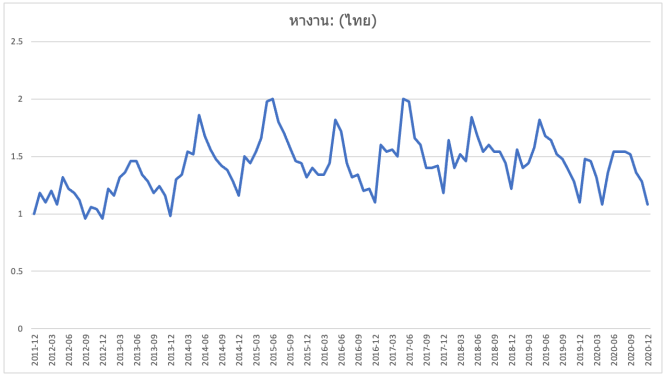

Figure 2: Trend of Keyword “หางาน”

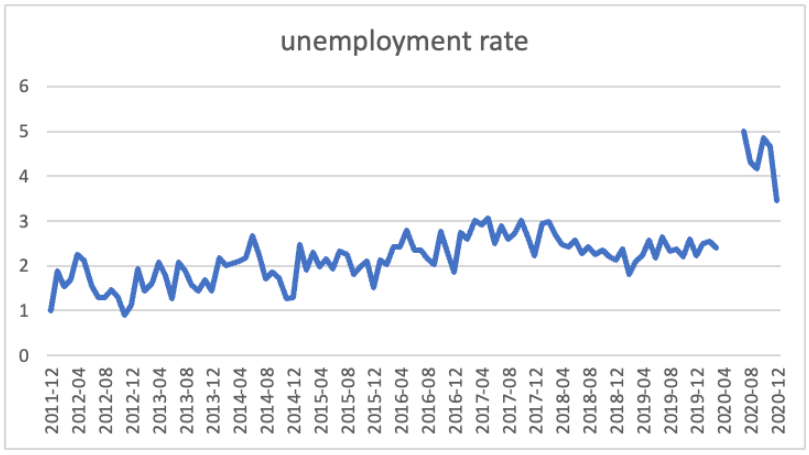

Figure 3 : Trend of Thai Unemployment rate

On the other hands, the dummy slope of model 1 the word “คนตกงาน” is proved to be positively significant implying that during the time of lockdown period, an increase in unemployment rate lead to a more pronounced impact on increased volume of search for “คนตกงาน”. Moreover, as you can see from the 3 figures shown above, figure 1 is more correlated to Thai unemployment rate than figure 2, which the word “คนตกงาน” is quite an informative search about the unemployment but not the solution to get out of being unemployed. Therefore in my personal opinion from the overall research, the search volume of the keyword “คนตกงาน” may be the people who are not in the part of unemployment such as researchers, or business sectors who utilize this data for their own analysis and benefit of their work, but not in desperate pursuit of job opportunity.

However, there might be some limitations on the accuracy of the google trends data since the search term may not be highly related to this paper’s topic

Conclusion and policy recommendations

Overall, unemployment has risen globally, however, depending on the demographic of the worker, the rate at which people lose their job differ. Unemployment affects the lower income the most, mainly those who are working in the informal sector and those with low wages. On the other hand, when comparing the loss of jobs at industry level, the tourism, manufacturing and service industry are the most affected by the COVID-19 pandemic.

In conclusion, from analysing the secondary data with the google trends, this paper can conclude there is a positive relationship between the unemployment rate and the search term volume in the google trends since the data shows that the unemployment rate has a positive effect on the Google trend keywords such as “ตกงาน” and “หางาน”, including the relationship to the COVID-19 pandemic situation.

From the research, my suggestion is that the government should intervene by impose the Monetary policy by cutting interest rates to encourage people to use more money and boost the aggregate demand

Since the pandemic accelerated the technological and structural changes, these laborers will need to be prepared for the occupations and skills that will be in demand in the ‘post-Covid’ labour market (Chernoff and Warman 2020). Therefore, the government may organize the community or create a policy to help the unemployed people to develop skills and be prepared after the pandemic ends.

For further research recommendations, this research does not include other factors about who are searching in the google trends. Therefore, for further research this paper suggested to investigate far more about the microstructure of the observation (the unemployed workers) whether they are the informal worker or the low skills labor, or do the network analysis.

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Appendix Normalized raw data

Normalized

เดือน	unemployment	หางาน (ไทย)	การว่างงาน (ไ	เว็บไซต์หางาน	รับสมัคร: (ไทย	ซับแต็กซี่: (ไทย	งาน (ไทย)	หาเงิน (ไทย)	หนี้ (ไทย)	รับจ้าง: (ไทย	หวย: (ไทย)	คนตกงาน (ไท	งานpart time:	part time: (ไท	คนตกงาน2	กู้เงิน (ไทย)
2011-12	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1
2012-01	1.88372093	1.18	1.44	0.701298701	1.435483871	2.916666667	1.157894737	0.923076923	1.125	1.043478261	1.125	0.95	1.5	1.317073171	1	0.9
2012-02	1.534883721	1.1	1.36	0.467532468	1.612903226	2.416666667	1.171052632	1.333333333	1	0.891304348	1	0.95	1.15	1.195121951	0.95	1
2012-03	1.697674419	1.2	1.28	0.688311688	1.580645161	2.333333333	1.157894737	0.948717949	0.875	1.086956522	0.875	0	1.7	1.658536585	0.95	0.9
2012-04	2.255813953	1.08	1.44	0	1.451612903	2.583333333	1.039473684	1.384615385	0.875	0.934782609	0.875	0.35	1.75	1.536585366	0	1
2012-05	2.139534884	1.32	1.24	0.220779221	1.338709677	2.75	1.105263158	1.179487179	1.125	1.02173913	1.125	0.9	1.125	0.975609756	0.35	1.2
2012-06	1.558139535	1.22	1.52	1.298701299	0.935483871	2.666666667	1.105263158	1.076923077	1.25	1.282608696	1.25	0	1.3	1.292682927	0.9	1.1
2012-07	1.302325581	1.18	1.44	0.597402597	0.967741935	5.416666667	1.052631579	1.256410256	1.25	1.02173913	1.25	0.8	1	1.024390244	0	0.9
2012-08	1.302325581	1.12	1.32	0.194805195	1	5.416666667	1	1.230769231	1.125	1.217391304	1.125	0.25	1.15	0.902439024	0.8	1
2012-09	1.465116279	0.96	1.52	0	0.935483871	5.333333333	1.039473684	1.307692308	1	1.152173913	1	1.35	0.925	1	0.25	0.8
2012-10	1.302325581	1.06	1.28	0	1	4.583333333	0.973684211	1.333333333	0.875	1.086956522	0.875	0.5	1	0.87804878	1.35	0.9
2012-11	0.906976744	1.04	1.36	0.753246753	1.016129032	3.083333333	1.105263158	1.153846154	0.875	0.956521739	0.875	0.5	0.8	0.926829268	0.5	1.1
2012-12	1.11627907	0.96	1.08	0	1.016129032	3.833333333	1	1.102564103	0.875	0.934782609	0.875	0.25	1	0.780487805	0.5	0.9
2013-01	1.930232558	1.22	1.32	0.350649351	1.290322581	2.916666667	1.118421053	1.153846154	1.125	0.956521739	1.125	0.5	0.975	0.87804878	0.25	0.9
2013-02	1.441860465	1.16	1.24	0.181818182	1.338709677	5.083333333	1.092105263	1.282051282	1	1.086217391	1	0.75	1.25	1.097560976	0.5	1
2013-03	1.604651163	1.32	1.28	0.844155844	1.483870968	4.916666667	1.131578947	1.538461538	1	1.217391304	1	0.45	2.25	2.048780488	0.75	1
2013-04	2.069767442	1.36	1.08	0.74025974	1.258064516	4.583333333	1.052631579	1.641025641	1	1.260869565	1	0	1.575	1.390243902	0.45	1.2
2013-05	1.790697674	1.46	1.04	1.194805195	1.322580645	5.25	1.131578947	1.461538462	1.125	1.739130435	1.125	0.7	1.475	1.317073171	0	1.3
2013-06	1.279069767	1.46	1.44	0.506493506	1.016129032	3.916666667	1.184210526	1.435897436	1.375	2.173913043	1.375	0.7	1.3	1.12195122	0.7	1.2
2013-07	2.069767442	1.34	1.52	0.792207792	0.935483871	4.25	1.078947368	1.487179487	1.25	1.717391304	1.25	0.85	1.3	1.219512195	0.7	1.1
2013-08	1.88372093	1.28	1.36	1.064935065	0.967741935	5.416666667	1.065789474	1.384615385	1.125	1.239130435	1.125	0.6	1.1	1.048780488	0.85	1
2013-09	1.558139535	1.18	1.4	0.298701299	0.983870968	3.75	1.052631579	1.282051282	1.125	1.130434783	1.125	0.4	1.05	1.170731707	0.6	1.2
2013-10	1.441860465	1.24	1.44	0.298701299	1.064516129	4.916666667	1.039473684	1.538461538	1.125	1.217391304	1.125	0.6	1.175	1.170731707	0.4	1.1
2013-11	1.674418605	1.16	1.4	0.155844156	1.274193548	3.166666667	1.105263158	1.128205128	1	1.086956522	1	0.85	1.125	1.12195122	0.6	1.1
2013-12	1.441860465	0.98	0.84	0.623376623	1	4.833333333	0.960526316	1.333333333	1	1.195652174	1	0.4	1.025	0.926829268	0.85	0.9
2014-01	2.186046512	1.3	1.24	0.727272727	1.274193548	4.25	1.092105263	1.41025641	1.125	1.02173913	1.125	0.2	1.225	1.146341463	0.4	1.3
2014-02	2	1.34	1.24	0.623376623	1.35483871	4.25	1.105263158	1.282051282	1.25	1.195652174	1.25	0.85	1.475	1.585365854	0.2	1.1
2014-03	2.046511628	1.54	1.32	0.415584416	1.5	3.75	1.131578947	1.564102564	1.25	1.152173913	1.25	0.2	2.5	2.243902439	0.85	1.1
2014-04	2.093023256	1.52	0.92	0.896103896	1.258064516	3.666666667	1.065789474	1.923076923	1.125	1.065217391	1.125	1.2	2.15	1.926829268	0.2	1
2014-05	2.186046512	1.86	1.12	0.441558442	1.274193548	5.75	1.197368421	1.974358974	1.25	1.217391304	1.25	0.6	2.5	2.43902439	1.2	1.4
2014-06	2.674418605	1.68	1.16	0.311688312	1.161290323	2.916666667	1.184210526	1.692307692	1.375	1.086956522	1.375	0.65	1.825	1.658536585	0.6	1.1
2014-07	2.255813953	1.56	1.04	0.467532468	1.064516129	4.166666667	1.105263158	1.59974359	1.5	1.5	1.5	0.65	0.95	0.902439024	0.65	1.2
2014-08	1.720930233	1.48	1.44	0.155844156	1.048387097	4.833333333	1.079947368	1.59974359	1.125	1.347826087	1.125	0.4	1.2	1.024390244	0.65	1.1
2014-09	1.860465116	1.42	1.52	0.298701299	1.032258065	3.333333333	1.105263158	1.333333333	1.375	1.195652174	1.375	0.6	0.95	0.951219512	0.4	1.2
2014-10	1.744186047	1.38	1.52	0.142857143	1	4.166666667	1.092105263	1.59974359	1.25	1.239130435	1.25	0.8	0.9	0.829268293	0.6	1.2
2014-11	1.279069767	1.28	1.2	0.441558442	1.161290323	4.583333333	1.131578947	1.435897436	1.25	1.130434783	1.25	0.4	0.95	0.87804878	0.8	1.2
2014-12	1.302325581	1.16	0.8	0.428571429	0.951612903	1.833333333	1.026315789	1.333333333	1.125	1.086956522	1.125	0.8	0.65	0.731707317	0.4	1.1
2015-01	2.465116279	1.5	0.96	0.415584416	1.451612903	4.083333333	1.171052632	1.384615385	1.125	1.217391304	1.125	0.4	0.925	0.951219512	0.8	1.2
2015-02	1.906976744	1.44	1.64	0.298701299	1.274193548	4.583333333	1.157894737	1.333333333	1.375	1.086956522	1.375	1.6	0.825	1.170731707	0.4	1.1
2015-03	2.302325581	1.54	0.96	0.532467532	1.387096774	4.75	1.131578947	1.59974359	1.375	1.195652174	1.375	0.55	1.825	1.853658537	1.6	1.2
2015-04	1.976744186	1.66	1.12	0.571428571	1.14516129	5.083333333	1.065789474	1.743589744	1.25	1.02173913	1.25	0.8	1.45	1.243902439	0.55	1.2
2015-05	2.162790698	1.98	1.08	0.805194805	1.274193548	3.083333333	1.210526316	1.59974359	1.25	1.065217391	1.25	0.55	1.775	1.682926829	0.8	1.6
2015-06	1.930232558	2	1.36	0.688311688	1.193548387	6.583333333	1.315789474	1.717948718	1.75	1.065217391	1.75	0.95	1.525	1.463414634	0.55	1.5
2015-07	2.325581395	1.8	1.32	0.38961039	1.096774194	4.083333333	1.184210526	1.692307692	1.625	1.369565217	1.625	1.1	1.05	1.024390244	0.95	1.4
2015-08	2.255813953	1.7	1.08	0.12987013	1.080645161	3.583333333	1.144736842	1.692307692	1.375	1.173913043	1.375	0.35	1.05	1.073170732	1.1	1.4
2015-09	1.813953488	1.58	1.56	0.623376623	0.967741935	4.916666667	1.144736842	1.282051282	1.625	1.108695652	1.625	0.7	0.925	0.902439024	0.35	1.2
2015-10	1.976744186	1.46	1.2	0.493506494	1.096774194	4.833333333	1.065789474	1.871794872	1.5	1.065217391	1.5	1.15	0.825	0.853658537	0.7	1.4
2015-11	2.093023256	1.44	1.52	0.519480519	1.161290323	4	1.157894737	1.717948718	1.5	1.108695652	1.5	1.55	0.725	0.682926829	1.15	1.3
2015-12	1.511627907	1.32	1.04	0.246753247	0.967741935	2.833333333	1.052631579	1.59974359	1.25	1.195652174	1.25	0.15	0.625	0.658536585	1.55	0.9
2016-01	2.11627907	1.4	1.44	0.805194805	1.129032258	3.083333333	1.184210526	1.205128205	1.125	0.97826087	1.125	0.55	0.95	0.975609756	0.15	0.9
2016-02	2.023255814	1.34	1.32	0.415584416	1.161290323	3.166666667	1.171052632	1.41025641	1.25	0.97826087	1.25	0.2	0.85	1.024390244	0.55	1.1
2016-03	2.418604651	1.34	1.44	0.636363636	1.209677419	4.5	1.184210526	1.512820513	1.125	1.043478261	1.125	0.5	1.35	1.56097561	0.2	1.2
2016-04	2.418604651	1.44	1.04	0.558441558	1.048387097	5	1.118421053	1.59974359	1.125	1.043478261	1.125	0.4	1.125	1.43902439	0.5	1.2
2016-05	2.790697674	1.82	1.08	0.805194805	1.080645161	5.333333333	1.25	1.512820513	1.25	1.043478261	1.25	0.75	1.375	1.731707317	0.4	1.3
2016-06	2.348837209	1.72	1.12	0.415584416	0.983870968	2.833333333	1.289473684	1.384615385	1.375	1.260869565	1.375	0.55	1.2	1.56097561	0.75	1.2
2016-07	2.348837209	1.44	1.28	0.571428571	0.806451613	5	1.131578947	1.717948718	2.5	0.891304348	2.5	1.35	0.825	1.121951122	0.55	1.1
2016-08	2.162790698	1.32	1.08	0.584415584	0.870967742	3	1.118421053	1.564102564	1.25	1.217391304	1.25	0.8	0.8	0.902439024	1.35	1.4
2016-09	2.023255814	1.34	1.76	0.142857143	0.822580645	3.25	1.131578947	1.564102564	1.375	1.02173913	1.375	0.2	0.75	0.853658537	0.8	1.2
2016-10	2.76744186	1.2	1.44	0.142857143	0.806451613	4.083333333	1	1.461538462	1.25	0.869565217	1.25	0.55	0.65	0.658536585	0.2	1.1
2016-11	2.302325581	1.22	1.4	0.74025974	0.951612903	2.75	1.105263158	1.384615385	1.375	1.108695652	1.375	0.2	0.55	0.707317073	0.55	1
2016-12	1.860465116	1.1	0.88	0.142857143	0.822580645	3.75	0.526315789	1.41025641	1.625	1.152173913	1.625	0.4	0.5	0.682926829	0.2	1.1
2017-01	2.744186047	1.6	1.4	0.272727273	1.209677419	3.416666667	0.631578947	1.641025641	1.875	1.326086957	1.875	0	0.75	0.926829268	0.4	1.3
2017-02	2.604651163	1.54	1.32	0.142857143	1.306451613	3.666666667	0.644736842	1.512820513	2	1.282608696	2	0.4	1.025	0.87804878	0	1.7
2017-03	3	1.56	1.48	0.402597403	1.451612903	4.083333333	0.657894737	1.717948718	2.125	1.282608696	2.125	1.45	1.3	1.390243902	0.4	2
2017-04	2.906976744	1.5	1.28	0.428571429	1.161290323	1.75	0.618421053	2.025641026	1.75	1.304347826	1.75	0.75	0.925	1.097560976	1.45	1.4
2017-05	3.069767442	2	1.28	0	1.112903226	3.75	0.723684211	1.923076923	2.625	1.434782609	2.625	1.15	1.3	1.317073171	0.75	1.4
2017-06	2.488372093	1.98	1.56	0.142857143	1.048387097	4.25	0.736842105	1.846153846	3.25	1.52173913	3.25	0.8	1.125	1.195121951	1.15	1.6
2017-07	2.88372093	1.66	1	0.142857143	0.887096774	4.166666667	0.657894737	1.974358974	2.625	1.391304348	2.625	1	0.75	0.902439024	0.8	1.4
2017-08	2.604651163	1.6	1.2	0.688311688	0.887096774	2.25	0.631578947	1.564102564	2.125	1.043478261	2.125	0.35	0.775	0.829268293	1	1.2
2017-09	2.720930233	1.4	1.64	0.415584416	0.774193548	4.333333333	0.592105263	1.794871795	2.5	1.217391304	2.5	0.75	0.65	0.731707317	0.35	1.2
2017-10	3	1.4	1.4	0.272727273	0.838709677	3.416666667	0.565789474	2.461538462	2.125	1.239130435	2.125	1.3	0.7	0.780487805	0.75	1.4
2017-11	2.651162791	1.42	1.6	0.142857143	1.064516129	5	0.592105263	1.538461538	2	1.369565217	2	0.75	0.575	0.634146341	1.3	1.4
2017-12	2.23255814	1.18	1.44	0.415584416	0.822580645	7.166666667	0.5	1.641025641	1.75	1.043478261	1.75	0.55	0.65	0.707317073	0.75	1.2

2018-01	2.930232558	1.64	1.36	0.675324675	1.161290323	3.666666667	0.671052632	1.615384615	1.875	1.347826087	1.875	1.5	0.75	0.902439024	0.55	1.9
2018-02	2.976744186	1.4	1.28	0.597402597	1.14516129	3.416666667	0.631578947	1.487179487	2.125	1.260869565	2.125	1.6	0.725	0.804878049	1.5	1.6
2018-03	2.697674419	1.52	1.4	0.25974026	1.177419355	4.166666667	0.644736842	1.923076923	1.875	1.47826087	1.875	1.1	1	1.170731707	1.6	1.6
2018-04	2.465116279	1.46	1.12	0.571428571	1.032258065	5.083333333	0.605263158	1.769230769	1.875	1.456521739	1.875	0.4	0.9	1.073170732	1.1	1.5
2018-05	2.418604651	1.84	1.44	0.272727273	1.080645161	6.416666667	0.736842105	1.974358974	2.125	1.608695652	2.125	1.65	0.95	1.390243902	0.4	1.7
2018-06	2.558139535	1.68	1.56	0.402597403	0.822580645	6.083333333	0.657894737	1.666666667	2.375	1.260869565	2.375	1.1	0.85	1.097560976	1.65	1.6
2018-07	2.279069767	1.54	1.64	0.38961039	0.822580645	4	0.592105263	1.692307692	2.75	1.391304348	2.75	0.7	0.6	0.731707317	1.1	1.5
2018-08	2.418604651	1.6	1.84	0.12987013	0.822580645	5.416666667	0.631578947	1.974358974	2.375	1.173913043	2.375	1.35	0.675	0.682926829	0.7	1.5
2018-09	2.255813953	1.54	1.96	0.402597403	0.838709677	5.25	0.657894737	1.846153846	2.5	1.260869565	2.5	0.35	0.65	0.731707317	1.35	1.5
2018-10	2.348837209	1.54	1.92	0.38961039	0.838709677	3.25	0.605263158	1.974358974	2.25	1.282608696	2.25	0	0.575	0.780487805	0.35	1.7
2018-11	2.209302326	1.44	1.6	0.272727273	0.919354839	3.75	0.631578947	1.820512821	2	1.399565217	2	0.4	0.575	0.682926829	0	1.4
2018-12	2.11627907	1.22	1.8	0.532467532	0.822580645	2.75	0.552631579	1.384615385	1.875	1.347826087	1.875	0.9	0.5	0.707317073	0.4	1.6
2019-01	2.372093023	1.56	1.76	0.506493506	1.064516129	4	0.723684211	1.307692308	1.875	1.130434783	1.875	1.55	0.725	0.853658537	0.9	1.6
2019-02	1.813953488	1.4	2.56	0.974025974	1.032258065	4.333333333	1.197368421	1.384615385	2.375	1.413043478	2.375	0.95	0.6	1.170731707	1.55	1.5
2019-03	2.093023256	1.44	2.68	0.636363636	1.14516129	6.666666667	1.157894737	1.564102564	3.5	1.282608696	3.5	0.5	1.125	1.487804878	0.95	1.7
2019-04	2.23255814	1.58	2.24	0.714285714	1.048387097	6.833333333	0.644736842	1.948717949	2	1.413043478	2	0.4	0.9	1.12195122	0.5	1.8
2019-05	2.581395349	1.82	2.92	0.25974026	0.951612903	5.416666667	0.736842105	1.666666667	2.375	1.565217391	2.375	0.55	0.95	1.292682927	0.4	2.1
2019-06	2.186046512	1.68	3	0.623376623	0.822580645	5	0.710526316	1.538461538	4.875	1.326086957	4.875	0.7	0.75	1.195121951	0.55	2.1
2019-07	2.651162791	1.64	4	0.74025974	0.741935484	3.333333333	0.697368421	1.794871795	6.5	1.399565217	6.5	1	0.675	1	0.7	1.8
2019-08	2.325581395	1.52	3.16	0.584415584	0.741935484	2.916666667	0.644736842	1.487179487	2.375	1.304347826	2.375	0.8	0.475	1.048780488	1	1.6
2019-09	2.372093023	1.48	3.32	0.116883117	0.741935484	3.833333333	0.697368421	1.59974359	2.625	1.413043478	2.625	0.85	0.45	0.756097561	0.8	1.7
2019-10	2.209302326	1.38	3	0.701298701	0.741935484	7.25	0.578947368	1.871794872	2.25	1.326086957	2.25	1.25	0.5	0.853658537	0.85	1.8
2019-11	2.604651163	1.28	2.72	0.363636364	0.758064516	4.25	0.552631579	1.461538462	2.125	1.282608696	2.125	1.65	0.475	0.658536585	1.25	1.8
2019-12	2.23255814	1.1	2.72	0.818181818	0.758064516	2.916666667	0.486842105	1.538461538	2.125	1.217391304	2.125	0.8	0.4	0.634146341	1.65	1.7
2020-01	2.488372093	1.48	2.48	0.454545455	0.983870968	6.166666667	0.631578947	1.692307692	3.25	1.173913043	3.25	1.1	0.475	0.658536585	0.8	1.8
2020-02	2.534883721	1.46	3	0.246753247	1.016129032	4	0.605263158	1.59974359	2.875	1.304347826	2.875	1.45	0.725	0.853658537	1.1	2
2020-03	2.395348837	1.32	2.64	0.545454545	0.967741935	3.166666667	0.5	1.820512821	9	1.326086957	9	4.5	0.575	0.853658537	1.45	2.5
2020-04		1.08	2.08	0.116883117	0.725806452	8.333333333	0.434210526	2.564102564	12.5	1.391304348	12.5	5	0.4	0.609756098	4.5	10
2020-05		1.36	1.92	0.103896104	0.822580645	1.833333333	0.526315789	2.205128205	3.5	1.304347826	3.5	2.35	0.525	0.682926829	5	5.9
2020-06		1.54	2.4	0.792207792	0.822580645	2.083333333	0.539473684	1.948717949	3.375	1.217391304	3.375	2.15	0.45	0.682926829	2.35	4.3
2020-07	5	1.54	2.28	0.116883117	0.758064516	2.75	0.578947368	1.615384615	3.25	1.347826087	3.25	3.95	0.45	0.853658537	2.15	3.5
2020-08	4.325581395	1.54	2.08	0.220779221	0.725806452	4.333333333	0.592105263	1.666666667	2.625	1.260869565	2.625	3.1	0.525	0.756097561	3.95	3.2
2020-09	4.162790698	1.52	2.16	0.350649351	0.774193548	3.083333333	0.578947368	1.615384615	2.75	1.130434783	2.75	2.2	0.5	0.682926829	3.1	3.2
2020-10	4.860465116	1.36	1.76	0.701298701	0.758064516	3.833333333	0.526315789	1.641025641	2.875	1.108695652	2.875	2.05	0.45	0.609756098	2.2	3.3
2020-11	4.651162791	1.28	1.56	0	0.774193548	3.5	0.473684211	1.59974359	3.875	1.152173913	3.875	1.6	0.45	0.634146341	2.05	3.8
2020-12	3.465116279	1.08	1.68	0.116883117	0.693548387	3.083333333	0.421052632	1.41025641	2.875	1.086956522	2.875	1.25	0.25	0.463414634	1.6	2.8