

Chapter8

GET IEX_ACWF_chart_3m

<https://api.iextrading.com/1.0/stock/ACWF/chart/3m>

Example Request

IEX_ACWF_chart_3m

```
curl --location --request GET "https://api.iextrading.com/1.0/stock/ACWF/chart/3m"
```

GET cf_etf_historical_prices_mapping

http://localhost:9200/cf_etf_hist_price/

Example Request

cf_etf_historical_prices_mapping

```
curl --location --request GET "http://localhost:9200/cf_etf_hist_price/"
```

GET cf_etf_historical_prices document_count

http://localhost:9200/cf_etf_hist_price/_count

Example Request

cf_etf_historical_prices document_count

```
curl --location --request GET "http://localhost:9200/  
cf_etf_hist_price/_count"
```

POST cf_etf_hist_price_dcoument_search_all

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

BODY

```
{  
  "size":61,  
  "query":{"match":{"symbol":"ACWF"}}  
}
```

Example Request

cf_etf_hist_price_dcoument_search_all

```
curl --location --request POST "http://localhost:9200/  
cf_etf_hist_price/_search" --header "Content-Type:  
application/json" --data '${ \"size\":61, \"query\":  
{\"match\":{\"symbol\":\"ACWF\"}} }'
```

POST cf_etf_hist_price_matrix_stats

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{  "size": 0,
    "query": { "match": { "symbol": "ACWF"}},
    "aggs": {
      "statistics": {
        "matrix_stats": {
          "fields": ["volume", "changePercent"]
        }
      }
    }
  }
```

Example Request

`cf_etf_hist_price_matrix_stats`

```
curl --location --request POST "http://localhost:9200/
cf_etf_hist_price/_search" --header "Content-Type:
application/json" --header "accept: application/json" --
data '${"\size": 0, "\query": { "\match": { "\symbol":
"\ACWF"}}, "\aggs": { "\statistics": { "\matrix_stats":
{ "\fields": ["volume", "changePercent"] } } } }'
```

GET count_cf_etf_hist_price_index_dcoument

http://localhost:9200/cf_etf_hist_price/_count

Example Request

count_cf_etf_hist_price_index_document

```
curl --location --request GET "http://localhost:9200/cf_etf_hist_price/_count"
```

DEL delete_cf_etf_hist_price_index

http://localhost:9200/cf_etf_hist_price/

Example Request

delete_cf_etf_hist_price_index

```
curl --location --request DELETE "http://localhost:9200/cf_etf_hist_price/"
```

POST cf_etf_hist_price_avg_acwf_change

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

Accept

application/json

BODY

```
{  "size": 0,
    "query": { "match": { "symbol": "ACWF"}},
    "aggs": {"acwf_avg_change_price": {"avg": { "field":
"change" }}}
}
```

Example Request

cf_etf_hist_price_avg_acwf_change

```
curl --location --request POST "http://localhost:9200/
cf_etf_hist_price/_search" --header "Content-Type:
application/json" --header "Accept: application/json" --
data '${"\size":0,"\query":{"match":{"symbol":
"\ACWF"}},\aggs":{"acwf_avg_change_price":{"avg":
{"field":"change"}}}}'
```

POST cf_etf_hist_price_weight_avg_acwf_change

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
    "size": 0,
    "query": { "match": { "symbol": "ACWF"}},
```

```

    "aggs": {
      "acwf_avg_change_with_vol_weight": {
        "weighted_avg": {
          "value": {"field": "change"},
        "weight": {"field": "volume"}
        }
      }
    }
  }
}

```

Example Request

cf_etf_hist_price_weight_avg_acwf_change

```

curl --location --request POST "http://localhost:9200/
cf_etf_hist_price/_search" --header "Content-Type:
application/json" --header "accept: application/json" --
data $'{"size": 0, "query": { "match": { "symbol":
"ACWF"}}, "aggs":
{ "acwf_avg_change_with_vol_weight": { "weighted_avg":
{ "value": {"field": "change"}, "weight":
{"field": "volume"} } } } }'

```

POST cf_etf_morningstart_categories_cardinality

http://localhost:9200/cf_etf/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "aggs": {
    "number_of_morningstar_category": {
      "cardinality": {"field":
"morningstar_category"}
    }
  }
}
```

Example Request

cf_etf_morningstart_categories_cardinality

```
curl --location --request POST "http://localhost:9200/
cf_etf/_search" --header "Content-Type: application/json"
--header "accept: application/json" --data $'{"size": 0,
"aggs": { "number_of_morningstar_category":
{ "cardinality": {"field":
"morningstar_category"} } } }'
```

POST cf_etf_morningstart_categories_value_count

http://localhost:9200/cf_etf/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "aggs": {
    "num_of_etfs_have_market_cap": {
      "value_count": {"field": "market_cap"}
    }
  }
}
```

Example Request

cf_etf_morningstart_categories_value_count

```
curl --location --request POST "http://localhost:9200/
cf_etf/_search" --header "Content-Type: application/json"
--header "accept: application/json" --data '{"size": 0,
"aggs": { "num_of_etfs_have_market_cap":
{ "value_count": {"field": "market_cap"} } } }'
```

POST cf_etf_dividend_acwf_amount_sum

http://localhost:9200/cf_etf_dividend_denormalize/_search

HEADERS

Content-Type

application/json

BODY

```
{
  "size": 0,
  "query": { "match": { "symbol": "ACWF" } },
  "aggs": {
    "sum_amount": {
      "sum": { "field": "amount" }
    }
  }
}
```

Example Request

cf_etf_dividend_acwf_amount_sum

```
curl --location --request POST "http://localhost:9200/
cf_etf_dividend_denormalize/_search" --header "Content-
Type: application/json" --data '${ "size": 0, "query":
{ "match": { "symbol": "ACWF" } }, "aggs":
{ "sum_amount": { "sum": { "field":
"amount" } } } }'
```

POST cf_etf_hist_price_acwf_minimum_open_price

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query": { "match": { "symbol": "ACWF"}},
  "aggs": {
    "minimum_open_price": {
      "min": {"field": "open"}
    }
  }
}
```

Example Request

cf_etf_hist_price_acwf_minimum_open_price

```
curl --location --request POST "http://localhost:9200/cf_etf_hist_price/_search" --header "Content-Type: application/json" --header "accept: application/json" --data '${\"size\": 0, \"query\": { \"match\": { \"symbol\": \"ACWF\"}}, \"aggs\": { \"minimum_open_price\": { \"min\": {\"field\": \"open\"} } } }'
```

POST cf_etf_hist_price_acwf_maximum_open_price

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query": { "match": { "symbol": "ACWF"}},
  "aggs": {
    "maximum_open_price": {
      "max": {"field": "open"}
    }
  }
}
```

Example Request

cf_etf_hist_price_acwf_maximum_open_price

```
curl --location --request POST "http://localhost:9200/cf_etf_hist_price/_search" --header "Content-Type: application/json" --header "accept: application/json" --data '${\"size\": 0, \"query\": { \"match\": { \"symbol\": \"ACWF\"}}, \"aggs\": { \"maximum_open_price\": { \"max\": {\"field\": \"open\"} } } }'
```

POST cf_etf_hist_price_acwf_stats_open_price

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query": { "match": { "symbol": "ACWF" } },
  "aggs": {
    "stats_open_price": {
      "stats": { "field": "open" }
    }
  }
}
```

Example Request

cf_etf_hist_price_acwf_stats_open_price

```
curl --location --request POST "http://localhost:9200/
cf_etf_hist_price/_search" --header "Content-Type:
application/json" --header "accept: application/json" --
data '${\"size\": 0, \"query\": { \"match\": { \"symbol\":
\"ACWF\" } }, \"aggs\": { \"stats_open_price\": { \"stats\":
{ \"field\": \"open\" } } } }'
```

POST cf_etf_hist_price_acwf_extended_stats_open_price

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query": { "match": { "symbol": "ACWF" } },
  "aggs": {
    "extend_stats_open_price": {
      "extended_stats": { "field": "open" }
    }
  }
}
```

Example Request

cf_etf_hist_price_acwf_extended_stats_open_price

```
curl --location --request POST "http://localhost:9200/
cf_etf_hist_price/_search" --header "Content-Type:
application/json" --header "accept: application/json" --
data '${\"size\": 0, \"query\": { \"match\": { \"symbol\":
\"ACWF\" } }, \"aggs\": { \"extend_stats_open_price\":
{ \"extended_stats\": { \"field\": \"open\" } } } }'
```

POST cf_etf_top_hit_morningstar_category

http://localhost:9200/cf_etf/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "aggs": {
    "category_top_hits": {
      "terms": {
        "field": "morningstar_category",
        "size": 5
      },
      "aggs": {
        "category_top_hits": {
          "top_hits": {}
        }
      }
    }
  }
}
```

Example Request

`cf_etf_top_hit_morningstar_category`

```
curl --location --request POST "http://localhost:9200/
cf_etf/_search" --header "Content-Type: application/json"
--header "accept: application/json" --data '${\"size\": 0,
\"aggs\": { \"category_top_hits\": { \"terms\":
{ \"field\": \"morningstar_category\", \"size\": 5 },
```

```
\\"aggs\\":{ \\"category_top_hits\\": { \\"top_hits\\":  
{} } } } }
```

POST cf_etf_hist_price_percentiles_open_price

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{  
  "size": 0,  
  "query": { "match": { "symbol": "ACWF"}},  
  "aggs": {  
    "open_price_percentiles": {  
      "percentiles": {"field":"open"}  
    }  
  }  
}
```

Example Request

cf_etf_hist_price_percentiles_open_price

```
curl --location --request POST "http://localhost:9200/  
cf_etf_hist_price/_search" --header "Content-Type:  
application/json" --header "accept: application/json" --
```

```
data $'{"size": 0, "query": { "match": { "symbol":  
"ACWF"}}, "aggs": { "open_price_percentiles":  
{ "percentiles": { "field": "open" } } }'
```

POST cf_etf_hist_price_percentile_rank_open_price

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{  
  "size": 0,  
  "query": { "match": { "symbol": "ACWF"}},  
  "aggs": {  
    "open_price_percentile_rank": {  
      "percentile_ranks": { "field": "open",  
"values":28.5}  
    }  
  }  
}
```

Example Request

cf_etf_hist_price_percentile_rank_open_price

```
curl --location --request POST "http://localhost:9200/
```



```
cf_etf_hist_price/_search" --header "Content-Type:
application/json" --header "accept: application/json" --
data $'{"size": 0, "query": { "match": { "symbol":
"ACWF"}}, "aggs": { "open_price_percentile_rank":
{ "percentile_ranks": { "field": "open", "values":
28.5} } } }'
```

POST cf_etf_hist_price_mad_acwf_percetChange

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query": { "match": { "symbol": "ACWF"}},
  "aggs": {
    "mad_change_percent": {
      "median_absolute_deviation":
{"field": "changePercent" }
    }
  }
}
```

Example Request

cf_etf_hist_price_mad_acwf_percetChange

```
curl --location --request POST "http://localhost:9200/  
cf_etf_hist_price/_search" --header "Content-Type:  
application/json" --header "accept: application/json" --  
data '${\"size\":0,\"query\":{\"match\":{\"symbol\":  
\"ACWF\"}},\"aggs\":{\"mad_change_percent\":  
{\"median_absolute_deviation\":{\"field\":  
\"changePercent\"}}}}'
```

POST cf_etf_hist_price_scripted_metric

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{  
  "size": 0,  
  "query": { "match": { "symbol": "ACWF"}},  
  "aggs": {  
    "highest_cp_cot_ratio": {  
      "scripted_metric": {  
        "init_script": "state.price_diff = new  
ArrayList()",  
        "map_script": "double value =  
doc.changeOverTime.value==0 ? 0 : doc.changePercent.value/
```

```

(doc.changeOverTime.value*100);
state.price_diff.add(value)",
        "combine_script": "return
Collections.max(state.price_diff)",
        "reduce_script": "return
Collections.max(states)"
    }
}
}
}
}

```

Example Request

cf_etf_hist_price_scripted_metric

```

curl --location --request POST "http://localhost:9200/
cf_etf_hist_price/_search" --header "Content-Type:
application/json" --header "accept: application/json" --
data '${\"size\": 0, \"query\": { \"match\": { \"symbol\":
\"ACWF\"}}, \"aggs\": { \"highest_cp_cot_ratio\":
{ \"scripted_metric\": { \"init_script\": \"state.price_diff
= new ArrayList()\", \"map_script\": \"double value =
doc.changeOverTime.value==0 ? 0 : doc.changePercent.value/
(doc.changeOverTime.value*100); state.price_diff.add(value)
\", \"combine_script\": \"return
Collections.max(state.price_diff)\", \"reduce_script\":
\"return Collections.max(states)\" } } } }'

```

POST cf_etf_hist_price_acwf_histogram

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query": { "match": { "symbol": "ACWF"}},
  "aggs": {
    "acwf_histogram": {
      "histogram": {
        "field": "open",
        "interval": 1,
        "extended_bounds": { "min":24,
"max":30}
      }
    }
  }
}
```

Example Request

cf_etf_hist_price_acwf_histogram

```
curl --location --request POST "http://localhost:9200/
cf_etf_hist_price/_search" --header "Content-Type:
application/json" --header "accept: application/json" --
data '${\"size\": 0, \"query\": { \"match\": { \"symbol\":
\"ACWF\"}}, \"aggs\": { \"acwf_histogram\":
{ \"histogram\": { \"field\": \"open\", \"interval\": 1,
\"extended_bounds\": { \"min\":24, \"max\":30} } } } }'
```

POST cf_etf_hist_price_acwf_date_histogram

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query": { "match": { "symbol": "ACWF"}},
  "aggs": {
    "monthly_trading_days": {
      "date_histogram": {
        "field": "date",
        "interval": "month",
        "format": "yyyy-MM-dd"
      }
    }
  }
}
```

Example Request

cf_etf_hist_price_acwf_date_histogram

```
curl --location --request POST "http://localhost:9200/
```

```
cf_etf_hist_price/_search" --header "Content-Type:
application/json" --header "accept: application/json" --
data $'{"size": 0, "query": { "match": { "symbol":
"ACWF"}}, "aggs":{ "monthly_trading_days":
{ "date_histogram":{ "field": "date", "interval":
"month", "format": "yyyy-MM-dd" } } } }'
```

POST

cf_etf_hist_price_acwf_auto_interval_date_histogram

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query": { "match": { "symbol": "ACWF"}},
  "aggs":{
    "monthly_trading_days": {
      "auto_date_histogram":{
        "field": "date",
        "buckets": "4",
        "format": "yyyy-MM-dd"
      }
    }
  }
}
```

```
}
```

Example Request

cf_etf_hist_price_acwf_auto_interval_date_histogram

```
curl --location --request POST "http://localhost:9200/  
cf_etf_hist_price/_search" --header "Content-Type:  
application/json" --header "accept: application/json" --  
data '${\"size\": 0, \"query\": { \"match\": { \"symbol\":  
\"ACWF\"}}, \"aggs\": { \"monthly_trading_days\":  
{ \"auto_date_histogram\": { \"field\": \"date\",  
\"buckets\": \"4\", \"format\": \"yyyy-MM-dd\" } } } }'
```

POST cf_etf_hist_price_acwf_ranges

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{  
  "size": 0,  
  "query": { "match": { "symbol": "ACWF"} },  
  "aggs": {  
    "monthly_trading_days": {  
      "range": {
```

```
        "field": "date",
        "format": "yyyy-MM-dd",
        "ranges":
[{"from":"2018-12-01"}, {"to":"2019-04-01"},
{"from":"2019-01-01", "to":"2019-02-01"}]
    }
}
}
```

Example Request

cf_etf_hist_price_acwf_ranges

```
curl --location --request POST "http://localhost:9200/cf_etf_hist_price/_search" --header "Content-Type: application/json" --header "accept: application/json" --data '${\n"size": 0, \n"query": { \n"match": { \n"symbol": \n"ACWF"\n}}, \n"aggs":{ \n"monthly_trading_days": { \n"range":{ \n"field": \n"date", \n"format": \n"yyyy-MM-dd", \n"ranges": [{\n"from":\n"2018-12-01",\n"to":\n"2019-04-01",\n"from":\n"2019-01-01",\n"to":\n"2019-02-01"}] } } } }'
```

POST cf_etf_hist_price_acwf_date_ranges

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query": { "match": { "symbol": "ACWF" } },
  "aggs": {
    "monthly_trading_days": {
      "date_range": {
        "field": "date",
        "format": "yyyy-MM-dd",
        "ranges":
[{"from": "2018-12-01"}, {"to": "2019-04-01"},
{"from": "2019-01-01", "to": "2019-01-01 | |+1M"}]
      }
    }
  }
}
```

Example Request

`cf_etf_hist_price_acwf_date_ranges`

```
curl --location --request POST "http://localhost:9200/
cf_etf_hist_price/_search" --header "Content-Type:
application/json" --header "accept: application/json" --
data '${"\size": 0, "\query": { "\match": { "\symbol":
"\ACWF" } }, "\aggs":{ "\monthly_trading_days":
{ "\date_range":{ "\field": "\date", "\format": "\yyyy-
MM-dd", "\ranges": [{"from": "\2018-12-01"}, {"to":
"\2019-04-01"}, {"from": "\2019-01-01", "\to":
"\2019-01-01 | |+1M"}] } } } }'
```

POST cf_etf_hist_price_filter_sub_aggs

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "aggs": {
    "avg_changePercent_at_date": {
      "filter": { "term": {
        "date": "2019-02-15"
      } },
      "aggs": { "avg_changePercent": { "avg": {
        "field": "changePercent"
      } } }
    }
  }
}
```

Example Request

cf_etf_hist_price_filter_sub_aggs

```
curl --location --request POST "http://localhost:9200/cf_etf_hist_price/_search" --header "Content-Type: application/json" --header "accept: application/json" --data '{"size": 0, "aggs": {
```

```
{ \"avg_changePercent_at_date\": { \"filter\":{\"term\":  
{\"date\": \"2019-02-15\"}}, \"aggs\":  
{\"avg_changePercent\": {\"avg\":{\"field\":  
\"changePercent\"}}}} } } }
```

POST cf_etf_hist_price_filters

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{  
  "size": 0,  
  "query": { "term": {"date": "2019-02-15"}},  
  "aggs": {  
    "filters_avg_changePercent": {  
      "filters": {  
        "filters": {  
          "less_than_avg":  
{"range": {"changePercent": {"lt": 0.60385}}},  
          "greater_than_avg":  
{"range": {"changePercent": {"gte": 0.60385}}} }  
        }  
      }  
    }  
  }  
}
```

Example Request

cf_etf_hist_price_filters

```
curl --location --request POST "http://localhost:9200/cf_etf_hist_price/_search" --header "Content-Type: application/json" --header "accept: application/json" --data '${\ "size\": 0, \ "query\": { \ "term\": { \ "date\": \ "2019-02-15\"}}, \ "aggs\":{ \ "filters_avg_changePercent\": { \ "filters\":{ \ "filters\": { \ "less_than_avg\": { \ "range\": { \ "changePercent\":{ \ "lt\":0.60385}}}, \ "greater_than_avg\":{ \ "range\": { \ "changePercent\": { \ "gte\":0.60385}}}} } } } } } }'
```

POST cf_etf_hist_price_terms_rating

http://localhost:9200/cf_etf/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "aggs": {
    "terms_on_rating": {
      "terms": {
```

```
        "field": "rating"
      }
    }
  }
}
```

Example Request

cf_etf_hist_price_terms_rating

```
curl --location --request POST "http://localhost:9200/
cf_etf/_search" --header "Content-Type: application/json"
--header "accept: application/json" --data $'{"size": 0,
{"aggs":{"terms_on_rating":{"terms":{"field":
"rating" } } } }'
```

POST cf_etf_hist_price_significant_terms

http://localhost:9200/cf_etf/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query": {"match": {"rating": 5}},
  "aggs": {
```

```
        "rating_vs_morningstar":{
            "significant_terms":{
                "field":"morningstar_category"
            }
        }
    }
}
```

Example Request

cf_etf_hist_price_significant_terms

```
curl --location --request POST "http://localhost:9200/cf_etf/_search" --header "Content-Type: application/json" --header "accept: application/json" --data '${\"size\": 0, \"query\":{\"match\":{\"rating\":5}}, \"aggs\": { \"rating_vs_morningstar\":{ \"significant_terms\": { \"field\":\"morningstar_category\" } } } }'
```

POST cf_etf_hist_price_significant_text

http://localhost:9200/cf_etf/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
```

```

    "size": 0,
    "query":{"match":{"rating":5}},
    "aggs":{"
      "rating_vs_fund_name":{"
        "significant_text":{"
          "field":"fund_name",
          "exclude": ["us", "p", "s",
"cap"],
          "size":5
        }
      }
    }
  }
}

```

Example Request

cf_etf_hist_price_significant_text

```

curl --location --request POST "http://localhost:9200/
cf_etf/_search" --header "Content-Type: application/json"
--header "accept: application/json" --data '{"size": 0,
"query":{"match":{"rating":5}}, "aggs":
{ "rating_vs_fund_name":{" significant_text":
{ "field":"fund_name", "exclude": ["us", "p",
"s", "cap"], "size":5 } } } }'

```

POST cf_etf_hist_price_sampler

http://localhost:9200/cf_etf/_search

HEADERS

Content-Type

application/json

BODY

```
{
  "size": 0,
  "aggs": {
    "sampling": {
      "sampler": { "shard_size":150},
      "aggs": {
        "significant_terms_category":
        {
          "significant_terms": {
            "field": "category"
          }
        }
      }
    }
  }
}
```

Example Request

cf_etf_hist_price_sampler

```
curl --location --request POST "http://localhost:9200/
cf_etf/_search" --header "Content-Type: application/json"
--data '${"\size\: 0, \aggs\: { \sampling\:
{ \sampler\: { \shard_size\:150}, \aggs\:
{ \significant_terms_category\: { \significant_terms\:
{ \field\: \category\" } } } } } }'
```

POST cf_etf_hist_price_diversified_sampler_10

http://localhost:9200/cf_etf/_search

HEADERS

Content-Type

application/json

BODY

```
{
  "size": 0,
  "aggs": {
    "sampling": {
      "diversified_sampler":
{"field": "family", "shard_size": 150, "max_docs_per_value" :
10},
      "aggs": {
        "significant_terms_category":
{
          "significant_terms": {
            "field": "category"
          }
        }
      }
    }
  }
}
```

Example Request

cf_etf_hist_price_diversified_sampler_10

```
curl --location --request POST "http://localhost:9200/
cf_etf/_search" --header "Content-Type: application/json"
```

```
--data '${\"size\": 0, \"aggs\": { \"sampling\":  
{ \"diversified_sampler\": {\"field\": \"family\",  
\"shard_size\":150, \"max_docs_per_value\" : 10}, \"aggs\":  
{ \"significant_terms_category\": { \"significant_terms\":  
{ \"field\": \"category\" } } } } } }
```

POST cf_etf_hist_price_diverified_sampler_61

http://localhost:9200/cf_etf/_search

HEADERS

Content-Type

application/json

BODY

```
{  
  "size": 0,  
  "aggs": {  
    "sampling": {  
      "diversified_sampler":  
{ "field": "family", "shard_size":150, "max_docs_per_value" :  
61},  
      "aggs": {  
        "significant_terms_category":  
{  
          "significant_terms": {  
            "field": "category"  
          }  
        }  
      }  
    }  
  }  
}
```

```
}
```

Example Request

cf_etf_hist_price_diverified_sampler_61

```
curl --location --request POST "http://localhost:9200/  
cf_etf/_search" --header "Content-Type: application/json"  
--data '${\"size\": 0, \"aggs\": { \"sampling\":  
{ \"diversified_sampler\": {\"field\":\"family\",  
\"shard_size\":150, \"max_docs_per_value\" : 61}, \"aggs\":  
{ \"significant_terms_category\": { \"significant_terms\":  
{ \"field\": \"category\" } } } } }'
```

POST cf_etf_dividend_nested_amount

http://localhost:9200/cf_etf_dividend_nested/_search

HEADERS

Content-Type

application/json

BODY

```
{  
  "size":0,  
  "aggs": {  
    "per_symbol":{  
      "terms": {"field":"symbol", "size":  
3},  
      "aggs":{  
        "total_dividend": {
```

```

        "nested": {
            "path": "announcement"
        },
        "aggs": {
            "total_amount": {
                "sum": { "field": "announcement.amount" }
            }
        }
    }
}

```

Example Request

cf_etf_dividend_nested_amount

```

curl --location --request POST "http://localhost:9200/
cf_etf_dividend_nested/_search" --header "Content-Type:
application/json" --data '${\"size\":0,\"aggs\":
{\"per_symbol\":{\"terms\":{\"field\":\"symbol\",\"size\":
3},\"aggs\":{\"total_dividend\":{\"nested\":{\"path\":
\"announcement\"},\"aggs\":{\"total_amount\":{\"sum\":
{\"field\":\"announcement.amount\"}}}}}}}'

```

POST cf_etf_dividend_reverse_nested

http://localhost:9200/cf_etf_dividend_nested/_search

HEADERS

Content-Type

application/json

BODY

```
{
  "size":0,
  "aggs": {
    "etf_category_distribution_on_dividend_type":
    {
      "nested": {
        "path":"announcement"
      },
      "aggs":{
        "by_dividend_type": {
          "terms":
{"field":"announcement.type"},
          "aggs": {

"total_by_etf_category":{

"reverse_nested":{},

"aggs":
{

"category":{"terms": {"field": "category"}}

}

}

}

}

}

}
```

Example Request

cf_etf_dividend_reverse_nested

```
curl --location --request POST "http://localhost:9200/
cf_etf_dividend_nested/_search" --header "Content-Type:
application/json" --data '${ \"size\":0, \"aggs\":
{ \"etf_category_distribution_on_dividend_type\":
{ \"nested\": { \"path\": \"announcement\" }, \"aggs\":
{ \"by_dividend_type\": { \"terms\": { \"field\":
\"announcement.type\" }, \"aggs\":
{ \"total_by_etf_category\": { \"reverse_nested\": { },
\"aggs\": { \"category\": { \"terms\": { \"field\":
\"category\" } } } } } } } } }
```

POST cf_etf_global

http://localhost:9200/cf_etf/_search

HEADERS

Content-Type

application/json

BODY

```
{
  "size":0,
  "query":{"prefix": {"family":"iShares"}},
  "aggs": {
    "ishares_avg_rating": {"avg":
{"field":"rating"}},
    "overall_avg_rating": {"global":{ }, "aggs":
{"global_avg_rating":{"avg":{"field":"rating"}}}
  }
}
```

```
}
```

Example Request

cf_etf_global

```
curl --location --request POST "http://localhost:9200/
cf_etf/_search" --header "Content-Type: application/json"
--data '${ \"size\":0, \"query\":{\"prefix\": {\"family\":
\"iShares\"}}, \"aggs\": { \"ishares_avg_rating\":
{\"avg\": {\"field\":\"rating\"}}, \"overall_avg_rating\":
{\"global\":{}}, \"aggs\":{\"global_avg_rating\":{\"avg\":
{\"field\":\"rating\"}}}} } }'
```

POST cf_etf_missing_category

http://localhost:9200/cf_etf/_search

HEADERS

Content-Type

application/json

BODY

```
{
  "size":0,
  "aggs": {
    "not_rated_count": {
      "missing": {"field":"rating"}
    }
  }
}
```

```
}
```

Example Request

cf_etf_missing_category

```
curl --location --request POST "http://localhost:9200/cf_etf/_search" --header "Content-Type: application/json" --data '${\"size\":0,\"aggs\":{\"notRatedCount\":{\"missing\":{\"field\":\"rating\"}}}}'
```

POST cf_etf_composite

http://localhost:9200/cf_etf/_search

HEADERS

Content-Type

application/json

BODY

```
{
  "query": {"query_string": {"query": "rating:[4 TO 5]"}},
  "size": 0,
  "aggs": {
    "multi_sources": {
      "composite": {
        "sources": [
          {"family": {"terms": {"field": "family"}}},
          {"rating": {"terms":
```



```
{
  "field": "rating"
},
{
  "size": 5
}
}
}
```

Example Request

cf_etf_composite

```
curl --location --request POST "http://localhost:9200/cf_etf/_search" --header "Content-Type: application/json" --data '${
  \"query\": {
    \"query_string\": {
      \"query\": \"rating:[4 TO 5]\"
    }
  },
  \"size\": 0,
  \"aggs\": {
    \"multi_sources\": {
      \"composite\": {
        \"sources\": [
          {
            \"family\": {
              \"terms\": {
                \"field\": \"family\"
              }
            },
            \"rating\": {
              \"terms\": {
                \"field\": \"rating\"
              }
            }
          }
        ]
      }
    }
  }
}
```

POST cf_etf_adjacent_matrix

http://localhost:9200/cf_etf/_search

HEADERS

Content-Type

application/json

BODY

```
{
```

```

    "size": 0,
    "aggs": {
      "adjacency_filters": {
        "adjacency_matrix": {
          "filters": {
            "rating_gte_5":
{"range":{"rating":{"gte":5}}},
            "family_prefix_A":
{"prefix":{"family":"iShares"}}
          }
        }
      }
    }
  }
}

```

Example Request

cf_etf_adjacent_matrix

```
curl --location --request POST "http://localhost:9200/cf_etf/_search" --header "Content-Type: application/json" --data '{"size": 0, "aggs": { "adjacency_filters": { "adjacency_matrix": { "filters": { "rating_gte_5": { "range": { "rating": { "gte": 5 } } }, "family_prefix_A": { "prefix": { "family": "iShares" } } } } } } }
```

POST cf_etf_dividend_join_parent_aggs

localhost:9200/cf_etf_dividend_join/_search

HEADERS

Content-Type

application/json

BODY

```
{
  "size":0,
  "aggs": {
    "cf_etf":{
      "parent": {
        "type": "dividend"
      },
      "aggs": {
        "count":{"value_count":
{"field":"symbol"}}
      }
    }
  }
}
```

Example Request

cf_etf_dividend_join_parent_aggs

```
curl --location --request POST "localhost:9200/
cf_etf_dividend_join/_search" --header "Content-Type:
application/json" --data $'{"size\:0,"aggs\:
{"cf_etf\":{"parent\":{"type\:"dividend"},"aggs\:
{"count\":{"value_count\":{"field\:"symbol\}}}}}'
```

POST cf_etf_dividend_join_children_aggs

localhost:9200/cf_etf_dividend_join/_search

HEADERS

Content-Type

application/json

BODY

```
{
  "aggs": {
    "dividends_for_symbol": {
      "terms": {"field": "symbol"},
      "aggs": {"dividend": { "children": { "type":
"dividend" },
      "aggs": { "total_dividend": { "sum":
{"field": "amount" }}}}}}}
    }
  }
}
```

Example Request

cf_etf_dividend_join_children_aggs

```
curl --location --request POST "localhost:9200/
cf_etf_dividend_join/_search" --header "Content-Type:
application/json" --data '${"\size":0,"\aggs":
{\dividend_for_symbol":{"terms":{"field":"symbol"},
\aggs":{"dividend":{"children":{"type":
\dividend"},\aggs":{"total_dividend":{"sum":
{\field":"amount"}}}}}}}}'
```

POST cf_etf_hist_price_acwf_avg_monthly_close

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query": {"match": {"symbol": "ACWF"}},
  "aggs": {
    "monthly_avg_close": {
      "date_histogram": {
        "field": "date",
        "interval": "month",
        "format": "yyyy-MM-dd"
      },
      "aggs": {
        "avg_close_on_month": {
          "avg": {"field": "close"}
        }
      }
    },
    "overall_avg_close": {
      "avg_bucket": {
        "buckets_path": "monthly_avg_close>avg_close_on_month"
      }
    }
  }
}
```

Example Request

cf_etf_hist_price_acwf_avg_monthly_close

```
curl --location --request POST "http://localhost:9200/
cf_etf_hist_price/_search" --header "Content-Type:
application/json" --header "accept: application/json" --
data '${\"size\": 0, \"query\":{\"match\": {\"symbol\":
\"ACWF\"}}, \"aggs\":{\"monthly_avg_close\":
{ \"date_histogram\":{\"field\": \"date\", \"interval\":
\"month\", \"format\": \"yyyy-MM-dd\" }, \"aggs\":
{ \"avg_close_on_month\":{\"avg\":{\"field\":
\"close\"} } } }, \"overall_avg_close\":{\"avg_bucket\":
{ \"buckets_path\":
\"monthly_avg_close>avg_close_on_month\" } } } }'
```

POST cf_etf_hist_price_acwf_max_monthly_avg_close

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query": {"match": {"symbol": "ACWF"}},
  "aggs": {
    "monthly_avg_close": {
```

```

        "date_histogram":{
            "field": "date",
            "interval": "month",
            "format": "yyyy-MM-dd"
        },
        "aggs":{
            "avg_close_on_month":{
                "avg":{"field":"close"}
            }
        }
    },
    "overall_max_avg_close":{
        "max_bucket": {
            "buckets_path":
"monthly_avg_close>avg_close_on_month"
        }
    }
}
}

```

Example Request

cf etf_hist price acwf max monthly avg close

```

curl --location --request POST "http://localhost:9200/
cf_etf_hist_price/_search" --header "Content-Type:
application/json" --header "accept: application/json" --
data '${\"size\": 0, \"query\":{\"match\": {\"symbol\":
\"ACWF\"}}, \"aggs\":{\"monthly_avg_close\":
{ \"date_histogram\":{\"field\": \"date\", \"interval\":
\"month\", \"format\": \"yyyy-MM-dd\" }, \"aggs\":
{ \"avg_close_on_month\":{\"avg\":{\"field\":
\"close\"} } } }, \"overall_max_avg_close\":
{ \"max_bucket\": { \"buckets_path\":
\"monthly_avg_close>avg_close_on_month\" } } } }'

```

POST cf_etf_hist_price_acwf_min_monthly_avg_close

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query": {"match": {"symbol": "ACWF"}},
  "aggs": {
    "monthly_avg_close": {
      "date_histogram": {
        "field": "date",
        "interval": "month",
        "format": "yyyy-MM-dd"
      },
      "aggs": {
        "avg_close_on_month": {
          "avg": {"field": "close"}
        }
      }
    },
    "overall_min_avg_close": {
      "min_bucket": {
        "buckets_path":
"monthly_avg_close>avg_close_on_month"
      }
    }
  }
}
```



```
}  
}  
}  
}
```

Example Request

cf_etf_hist_price_acwf_min_monthly_avg_close

```
curl --location --request POST "http://localhost:9200/  
cf_etf_hist_price/_search" --header "Content-Type:  
application/json" --header "accept: application/json" --  
data '${\"size\": 0, \"query\":{\"match\": {\"symbol\":  
\"ACWF\"}}, \"aggs\":{ \"monthly_avg_close\":  
{ \"date_histogram\":{ \"field\": \"date\", \"interval\":  
\"month\", \"format\": \"yyyy-MM-dd\" }, \"aggs\":  
{ \"avg_close_on_month\":{ \"avg\":{\"field\":  
\"close\"} } } }, \"overall_min_avg_close\":  
{ \"min_bucket\": { \"buckets_path\":  
\"monthly_avg_close>avg_close_on_month\" } } } }'
```

POST cf_etf_hist_price_acwf_sum_monthly_change

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query":{"match": {"symbol":"ACWF"}},
  "aggs":{"
    "monthly_change": {
      "date_histogram":{
        "field": "date",
        "interval": "month",
        "format": "yyyy-MM-dd"
      },
      "aggs":{
        "change_on_month":{
          "sum":
{"field":"change"}
        }
      }
    },
    "overall_monthly_change":{
      "sum_bucket": {
        "buckets_path":
"monthly_change>change_on_month"
      }
    }
  }
}
```

Example Request

cf_etf_hist_price_acwf_sum_monthly_change

```
curl --location --request POST "http://localhost:9200/
cf_etf_hist_price/_search" --header "Content-Type:
application/json" --header "accept: application/json" --
data $'{"size": 0, "query":{"match":{"symbol":
```

```
\\"ACWF\\"}}, \\"aggs\\":{ \\"monthly_change\\":  
{ \\"date_histogram\\":{ \\"field\\": \\"date\\", \\"interval\\":  
\\"month\\", \\"format\\": \\"yyyy-MM-dd\\" }, \\"aggs\\":  
{ \\"change_on_month\\":{ \\"sum\\":{\\\"field\\":  
\\"change\\"} } } }, \\"overall_monthly_change\\":  
{ \\"sum_bucket\\": { \\"buckets_path\\":  
\\"monthly_change>change_on_month\\" } } } }'
```

POST cf_etf_hist_price_acwf_statistics_monthly_change

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{  
  "size": 0,  
  "query":{"match": {"symbol":"ACWF"}},  
  "aggs":{  
    "monthly_change": {  
      "date_histogram":{  
        "field": "date",  
        "interval": "month",  
        "format": "yyyy-MM-dd"  
      },  
      "aggs":{  
        "change_on_month":{  
          "sum":
```

```

{"field": "change"}
    }
  },
  "stats_monthly_change": {
    "stats_bucket": {
      "buckets_path":
"monthly_change>change_on_month"
    }
  }
}

```

Example Request

cf_etf_hist_price_acwf_statistics_monthly_change

```

curl --location --request POST "http://localhost:9200/
cf_etf_hist_price/_search" --header "Content-Type:
application/json" --header "accept: application/json" --
data '${\"size\": 0, \"query\":{\"match\": {\"symbol\":
\"ACWF\"}}, \"aggs\":{ \"monthly_change\":
{ \"date_histogram\":{ \"field\": \"date\", \"interval\":
\"month\", \"format\": \"yyyy-MM-dd\" }, \"aggs\":
{ \"change_on_month\":{ \"sum\":{\"field\":
\"change\"} } } }, \"overall_monthly_change\":
{ \"sum_bucket\": { \"buckets_path\":
\"monthly_change>change_on_month\" } } } }'

```

POST

cf_etf_hist_price_acwf_extended_statistics_monthly_chang
e

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query": {"match": {"symbol": "ACWF"}},
  "aggs": {
    "monthly_change": {
      "date_histogram": {
        "field": "date",
        "interval": "month",
        "format": "yyyy-MM-dd"
      },
      "aggs": {
        "change_on_month": {
          "sum":
{"field": "change"}
        }
      }
    },
    "extended_stats_monthly_change": {
      "extended_stats_bucket": {
        "buckets_path":
"monthly_change>change_on_month"
      }
    }
  }
}
```

```
}
```

Example Request

cf_etf_hist_price_acwf_extended_statistics_monthly_change

```
curl --location --request POST "http://localhost:9200/  
cf_etf_hist_price/_search" --header "Content-Type:  
application/json" --header "accept: application/json" --  
data '${\"size\": 0, \"query\":{\"match\": {\"symbol\":  
\"ACWF\"}}, \"aggs\":{ \"monthly_change\":  
{ \"date_histogram\":{ \"field\": \"date\", \"interval\":  
\"month\", \"format\": \"yyyy-MM-dd\" }, \"aggs\":  
{ \"change_on_month\":{ \"sum\":{\"field\":  
\"change\"} } } }, \"extended_stats_monthly_change\":  
{ \"extended_stats_bucket\": { \"buckets_path\":  
\"monthly_change>change_on_month\" } } } }'
```

POST cf_etf_hist_price_acwf_percentiles_weekly_change

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
```

```

    "size": 0,
    "query": {"match": {"symbol": "ACWF"}},
    "aggs": {
      "weekly_change": {
        "date_histogram": {
          "field": "date",
          "interval": "week",
          "format": "yyyy-MM-dd"
        },
        "aggs": {
          "change_on_week": {
            "sum":
{"field": "change"}
          }
        }
      },
      "percentile_weekly_change": {
        "percentiles_bucket": {
          "buckets_path":
"weekly_change>change_on_week"
        }
      }
    }
  }
}

```

Example Request

cf_etf_hist_price_acwf_percentiles_weekly_change

```

curl --location --request POST "http://localhost:9200/
cf_etf_hist_price/_search" --header "Content-Type:
application/json" --header "accept: application/json" --
data '{"size": 0, "query": {"match": {"symbol":
"ACWF"}}, "aggs": { "weekly_change":
{ "date_histogram": { "field": "date", "interval":

```

```
\ "week\", \"format\": \"yyyy-MM-dd\" }, \"aggs\":  
{ \"change_on_week\":{ \"sum\":{\"field\":  
\"change\"} } } }, \"percentile_weekly_change\":  
{ \"percentiles_bucket\": { \"buckets_path\":  
\"weekly_change>change_on_week\" } } } }
```

POST cf_etf_hist_price_acwf_cumulative_sum

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{  
  "size": 0,  
  "query":{ "match": { "symbol": "ACWF" } },  
  "aggs":{  
    "monthly_change": {  
      "date_histogram":{  
        "field": "date",  
        "interval": "month",  
        "format": "yyyy-MM-dd"  
      },  
      "aggs":{  
        "change_on_month":{  
          "sum":  
            { "field": "change" }  
        },  
      },  
    },  
  },  
}
```



```

    "cumulative_change": {
      "cumulative_sum": {
        "buckets_path":
"change_on_month"
      }
    }
  }
}

```

Example Request

cf_etf_hist_price_acwf_cumulative_sum

```
curl --location --request POST "http://localhost:9200/cf_etf_hist_price/_search" --header "Content-Type: application/json" --header "accept: application/json" --data $'{"size":0,"query":{"match":{"symbol":"ACWF"}},"aggs":{"monthly_change":{"date_histogram":{"field":"date","interval":"month","format":"yyyy-MM-dd"},"aggs":{"change_on_month":{"sum":{"field":"change"}},"cumulative_change":{"cumulative_sum":{"buckets_path":"change_on_month"}}}}}}'
```

POST cf_etf_hist_price_acwf_derivative

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query": {"match": {"symbol": "ACWF"}},
  "aggs": {
    "monthly_change": {
      "date_histogram": {
        "field": "date",
        "interval": "month",
        "format": "yyyy-MM-dd"
      },
      "aggs": {
        "change_on_month": {
          "sum":
{"field": "change"}
        },
        "first_order_derivative": {
          "derivative": {
            "buckets_path":
"change_on_month"
          }
        },
        "second_order_derivative": {
          "derivative": {
            "buckets_path":
"first_order_derivative"
          }
        }
      }
    }
  }
}
```

```
}
```

Example Request

cf_etf_hist_price_acwf_derivative

```
curl --location --request POST "http://localhost:9200/  
cf_etf_hist_price/_search" --header "Content-Type:  
application/json" --header "accept: application/json" --  
data '${\"size\": 0, \"query\":{\"match\": {\"symbol\":  
\"ACWF\"}}, \"aggs\":{ \"monthly_change\":  
{ \"date_histogram\":{ \"field\": \"date\", \"interval\":  
\"month\", \"format\": \"yyyy-MM-dd\" }, \"aggs\":  
{ \"change_on_month\":{ \"sum\":{\"field\":\"change\"} },  
\"first_order_derivative\":{ \"derivative\":  
{ \"buckets_path\": \"change_on_month\" } },  
\"second_order_derivative\": { \"derivative\":  
{ \"buckets_path\": \"first_order_derivative\" } } } } } }'
```

POST cf_etf_hist_price_bucket_script

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```

{
  "size": 0,
  "query": {"match": {"symbol": "ACWF"}},
  "aggs": {
    "monthly_change": {
      "date_histogram": {
        "field": "date",
        "interval": "month",
        "format": "yyyy-MM-dd"
      },
      "aggs": {
        "change_on_month": { "sum":
{"field": "change"}},
        "min_change_on_month": { "min":
{"field": "change"}},
        "max_change_on_month": { "max":
{"field": "change"}},
        "range_of_change": {
          "bucket_script": {
            "buckets_path": {

"min_value": "min_change_on_month",

"max_value": "max_change_on_month"

          },

"script": "params.max_value - params.min_value"

        }
      }
    }
  }
}

```

Example Request

cf_etf_hist_price_bucket_script

```
curl --location --request POST "http://localhost:9200/cf_etf_hist_price/_search" --header "Content-Type: application/json" --header "accept: application/json" --data $'{"size":0,"query":{"match":{"symbol":"ACWF"}},"aggs":{"monthly_change":{"date_histogram":{"field":"date","interval":"month"},"format":"yyyy-MM-dd"},"aggs":{"change_on_month":{"sum":{"field":"change"}},"min_change_on_month":{"min":{"field":"change"}},"max_change_on_month":{"max":{"field":"change"}},"range_of_change":{"bucket_script":{"buckets_path":{"min_value":"min_change_on_month","max_value":"max_change_on_month"},"script":"params.max_value - params.min_value"}}}}}}'
```

POST cf_etf_hist_price_bucket_selector

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query": {"match": {"symbol": "ACWF"}} ,
```

```

    "aggs":{
      "negative_monthly_change": {
        "date_histogram":{
          "field": "date",
          "interval": "month",
          "format": "yyyy-MM-dd"
        },
        "aggs":{
          "change_on_month":{ "sum":
{"field":"change"}},
"filter_positive_change_on_month":{
          "bucket_selector":{
            "buckets_path":{
"monthly_change_value":"change_on_month"
            },
"script":"params.monthly_change_value<0"
          }
        }
      }
    }
  }
}

```

Example Request

cf_etf_hist_price_bucket_selector

```

curl --location --request POST "http://localhost:9200/
cf_etf_hist_price/_search" --header "Content-Type:
application/json" --header "accept: application/json" --
data '${\"size\":0,\"query\":{\"match\":{\"symbol\":
\"ACWF\"}},\"aggs\":{\"negative_monthly_change\":

```

```
{\"date_histogram\":{\"field\":\"date\", \"interval\":  
\"month\", \"format\":\"yyyy-MM-dd\"}, \"aggs\":  
{\"change_on_month\":{\"sum\":{\"field\":\"change\"}},  
\"filter_positive_change_on_month\":{\"bucket_selector\":  
{\"buckets_path\":{\"monthly_change_value\":  
\"change_on_month\"}, \"script\":  
\"params.monthly_change_value<0\"}}}}}}'
```

POST cf_etf_dividend_nested_amount bucket_sort

http://localhost:9200/cf_etf_dividend_nested/_search

HEADERS

Content-Type

application/json

BODY

```
{  
  "size":0,  
  "aggs": {  
    "per_symbol":{  
      "terms": { "field": "symbol" },  
      "aggs":{  
        "total_dividend": {  
          "nested": {  
            "path": "announcement"  
          }  
        },  
        "aggs": {  
          "total_amount": {  
            "sum": { "field": "announcement.amount" }  
          }  
        }  
      }  
    }  
  }  
}
```

Example Request

cf_etf_dividend_nested_amount_bucket_sort

```
curl --location --request POST "http://localhost:9200/cf_etf_dividend_nested/_search" --header "Content-Type: application/json" --data $'{"size":0, "aggs":{"per_symbol":{"terms":{"field":"symbol"}, "aggs":{"total_dividend":{"nested":{"path":"announcement"}, "aggs":{"total_amount":{"sum":{"field":"announcement.amount"}}}}}}}, "sort":{"bucket_sort":{"sort":{"total_dividend.total_amount":{"order":"desc"}}}], "from":0, "size":3 } } } } }
```

POST cf_etf_hist_price_acwf_serial_diff

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

BODY

```
{
  "size": 0,
  "query": {"match": {"symbol": "ACWF"}},
  "aggs": {
    "serial_diff_weekly_avg_change": {
      "date_histogram": {
        "field": "date",
        "interval": "week",
        "format": "yyyy-MM-dd"
      },
      "aggs": {
        "weekly_avg_change": {
          "avg":
{"field": "change"}

        },
        "weekly_avg_serial_diff": {
          "serial_diff": {

"buckets_path": "weekly_avg_change",

          "lag": 1
        }
      }
    }
  }
}
```

Example Request

cf_etf_hist_price_acwf_serial_diff

```
curl --location --request POST "http://localhost:9200/cf_etf_hist_price/_search" --header "Content-Type: application/json" --data '${\"size\": 0, \"query\": {\"match\": {\"symbol\": \"ACWF\"}}, \"ags\": { \"serial_diff_weekly_avg_change\": { \"date_histogram\": { \"field\": \"date\", \"interval\": \"week\", \"format\": \"yyyy-MM-dd\" }, \"ags\": { \"weekly_avg_change\": { \"avg\": {\"field\": \"change\"} }, \"weekly_avg_serial_diff\": { \"serial_diff\": { \"buckets_path\": \"weekly_avg_change\", \"lag\": 1 } } } } } }
```

POST cf_etf_hist_price_acwf_moving_avg_simple

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
```

```

    "size": 0,
    "query": {"match": {"symbol": "ACWF"}},
    "aggs": {
      "monthly_change": {
        "date_histogram": {
          "field": "date",
          "interval": "week",
          "format": "yyyy-MM-dd"
        },
        "aggs": {
          "weekly_change": {
            "sum":
{"field": "change"}
          },
          "weekly_moving_avg": {
            "moving_avg": {
"buckets_path": "weekly_change",
"model": "simple",
"window": 4,
"predict": 4
            }
          }
        }
      }
    }
  }
}

```

Example Request

cf_etf_hist_price_acwf_moving_avg_simple

```
curl --location --request POST "http://localhost:9200/
cf_etf_hist_price/_search" --header "Content-Type:
```

```
application/json" --header "accept: application/json" --
data '${"\size\: 0, \"query\":{\"match\": {\"symbol\":
\"ACWF\"}}}, \"aggs\":{ \"monthly_change\":
{ \"date_histogram\":{ \"field\": \"date\", \"interval\":
\"week\", \"format\": \"yyyy-MM-dd\" }, \"aggs\":
{ \"weekly_change\":{ \"sum\":{\"field\": \"change\"} },
\"weekly_moving_avg\": { \"moving_avg\":{ \"buckets_path\":
\"weekly_change\", \"model\": \"simple\", \"window\":4,
\"predict\":4 } } } } } }'
```

POST cf_etf_hist_price_acwf_moving_avg_linear

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query": {"match": {"symbol": "ACWF"}},
  "aggs": {
    "monthly_change": {
      "date_histogram": {
        "field": "date",
        "interval": "week",
        "format": "yyyy-MM-dd"
      },
      "aggs": {
```


POST cf_etf_hist_price_acwf_moving_avg_ewma

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query": {"match": {"symbol": "ACWF"}},
  "aggs": {
    "monthly_change": {
      "date_histogram": {
        "field": "date",
        "interval": "week",
        "format": "yyyy-MM-dd"
      },
      "aggs": {
        "weekly_change": {
          "sum":
{"field": "change"}

        },
        "weekly_moving_avg": {
          "moving_avg": {
            "model": "ewma",
            "settings": {
```

```
{
  "alpha": 0.3,
  "window": 4,
  "predict": 4
}
```

Example Request

cf_etf_hist_price_acwf_moving_avg_ewma

```
curl --location --request POST "http://localhost:9200/
cf_etf_hist_price/_search" --header "Content-Type:
application/json" --header "accept: application/json" --
data '${"\size":0,"\query":{"match":{"symbol":
"ACWF"}},\aggs":{"monthly_change":
{"date_histogram":{"field":"date","\interval":
"week","\format":"yyyy-MM-dd"},"aggs":
{"weekly_change":{"sum":{"field":"change"}},
"weekly_moving_avg":{"moving_avg":{"buckets_path":
"weekly_change","\model":"ewma","\settings":
{"alpha":0.3},"window":4,"predict":4}}}}}'
```

POST cf_etf_hist_price_acwf_moving_avg_holt_linear

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query": {"match": {"symbol": "ACWF"}},
  "aggs": {
    "monthly_change": {
      "date_histogram": {
        "field": "date",
        "interval": "week",
        "format": "yyyy-MM-dd"
      },
      "aggs": {
        "weekly_change": {
          "sum":
{"field": "change"}
        },
        "weekly_moving_avg": {
          "moving_avg": {
            "buckets_path": "weekly_change",
            "model": "holt",
            "settings":
{"alpha": 0.3, "beta": 0.3},
            "window": 4,
            "predict": 4
          }
        }
      }
    }
  }
}
```


Example Request

cf_etf_hist_price_acwf_moving_avg_holt_linear

```
curl --location --request POST "http://localhost:9200/cf_etf_hist_price/_search" --header "Content-Type: application/json" --header "accept: application/json" --data '${ \"size\": 0, \"query\":{ \"match\": { \"symbol\": \"ACWF\" } }, \"aggs\":{ \"monthly_change\": { \"date_histogram\":{ \"field\": \"date\", \"interval\": \"week\", \"format\": \"yyyy-MM-dd\" } }, \"aggs\": { \"weekly_change\":{ \"sum\":{ \"field\": \"change\" } }, \"weekly_moving_avg\": { \"moving_avg\":{ \"buckets_path\": \"weekly_change\", \"model\": \"holt\", \"settings\": { \"alpha\": 0.3, \"beta\": 0.3 }, \"window\": 4, \"predict\": 4 } } } } } }
```

POST cf_etf_hist_price_acwf_moving_avg_holt_winters

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
```

```

    "size": 0,
    "query": {"match": {"symbol": "ACWF"}},
    "aggs": {
      "monthly_change": {
        "date_histogram": {
          "field": "date",
          "interval": "week",
          "format": "yyyy-MM-dd"
        },
        "aggs": {
          "weekly_change": {
            "sum":
{"field": "change"}

          },
          "weekly_moving_avg": {
            "moving_avg": {

"buckets_path": "weekly_change",

"model": "holt_winters",

"settings":
{"type" : "mult", "alpha": 0.8, "beta": 0.3, "gamma": 0.3,
"period": 1},

"window": 4,
"predict": 4

            }
          }
        }
      }
    }
  }
}

```

Example Request

cf_etf_hist_price_acwf_moving_avg_holt_winters

```
curl --location --request POST "http://localhost:9200/cf_etf_hist_price/_search" --header "Content-Type: application/json" --header "accept: application/json" --data '${ \"size\": 0, \"query\":{\"match\": {\"symbol\": \"ACWF\"}}, \"aggs\":{ \"monthly_change\": { \"date_histogram\":{ \"field\": \"date\", \"interval\": \"week\", \"format\": \"yyyy-MM-dd\" }, \"aggs\": { \"weekly_change\":{ \"sum\":{\"field\":\"change\"} }, \"weekly_moving_avg\": { \"moving_avg\":{ \"buckets_path\": \"weekly_change\", \"model\":\"holt_winters\", \"settings\":{\"type\" : \"mult\", \"alpha\":0.8, \"beta\":0.3, \"gamma\":0.3, \"period\":1}, \"window\":4, \"predict\":4 } } } } } }
```

POST cf_etf_hist_price_acwf_moving_fn_max

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query":{ "match": { "symbol": "ACWF" } },
  "aggs":{
    "monthly_change": {
```



```
{\"weekly_change\":{\"sum\":{\"field\":\"change\"}},  
\"max_weekly_change\":{\"moving_fn\":{\"buckets_path\":  
\"weekly_change\",\"script\":\"MovingFunctions.max(values)  
\", \"window\":4}}}}}
```

POST cf_etf_hist_price_acwf_moving_fn_min

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{  
  "size": 0,  
  "query":{"match": {"symbol":"ACWF"}},  
  "aggs":{  
    "monthly_change": {  
      "date_histogram":{  
        "field": "date",  
        "interval": "week",  
        "format": "yyyy-MM-dd"  
      },  
      "aggs": {  
        "weekly_change":{  
          "sum":  
{"field":"change"}  
        },  
        "min weekly change": {
```

```

        "moving_fn": {
            "buckets_path": "weekly_change",
            "script": "MovingFunctions.min(values)",
            "window": 4
        }
    }
}

```

Example Request

cf_etf_hist_price_acwf_moving_fn_min

```
curl --location --request POST "http://localhost:9200/cf_etf_hist_price/_search" --header "Content-Type: application/json" --header "accept: application/json" --data $'{"size": 0, "query":{"match":{"symbol":"ACWF"}}, "aggs":{"monthly_change":{"date_histogram":{"field":"date", "interval":"week", "format":"yyyy-MM-dd" }, "aggs":{"weekly_change":{"sum":{"field":"change" }}, "min_weekly_change":{"moving_fn":{"buckets_path":"weekly_change", "script":"MovingFunctions.min(values)", "window":4 } } } } } }
```

POST cf_etf_hist_price_acwf_moving_fn_sum

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query": {"match": {"symbol": "ACWF"}},
  "aggs": {
    "monthly_change": {
      "date_histogram": {
        "field": "date",
        "interval": "week",
        "format": "yyyy-MM-dd"
      },
      "aggs": {
        "weekly_change": {
          "sum":
{"field": "change"}
        },
        "total_weekly_change": {
          "moving_fn": {
            "buckets_path": "weekly_change",
            "script": "MovingFunctions.sum(values)",
            "window": 4
          }
        }
      }
    }
  }
}
```

```
}  
}
```

Example Request

cf_etf_hist_price_acwf_moving_fn_sum

```
curl --location --request POST "http://localhost:9200/  
cf_etf_hist_price/_search" --header "Content-Type:  
application/json" --header "accept: application/json" --  
data '${\"size\": 0, \"query\":{\"match\": {\"symbol\":  
\"ACWF\"}}, \"aggs\":{ \"monthly_change\":  
{ \"date_histogram\":{ \"field\": \"date\", \"interval\":  
\"week\", \"format\": \"yyyy-MM-dd\" }, \"aggs\":  
{ \"weekly_change\":{ \"sum\":{\"field\":\"change\"} },  
\"total_weekly_change\": { \"moving_fn\":  
{ \"buckets_path\":\"weekly_change\", \"script\":  
\"MovingFunctions.sum(values)\", \"window\":4 } } } } } }'
```

POST cf_etf_hist_price_acwf_moving_fn_unweightedAvg

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY


```

{
  "size": 0,
  "query": {"match": {"symbol": "ACWF"}},
  "aggs": {
    "weekly_change": {
      "date_histogram": {
        "field": "date",
        "interval": "week",
        "format": "yyyy-MM-dd"
      },
      "aggs": {
        "weekly_change": {
          "sum":
{"field": "change"}

        },
        "weekly_change_unweightedAvg":
{
          "moving_fn": {

"buckets_path": "weekly_change",

"script": "MovingFunctions.unweightedAvg(values)",
          "window": 4

        }
      }
    }
  }
}

```

Example Request

cf_etf_hist_price_acwf_moving_fn_unweightedAvg

```
curl --location --request POST "http://localhost:9200/
```

```
cf_etf_hist_price/_search" --header "Content-Type:
application/json" --header "accept: application/json" --
data $'{"size":0,"query":{"match":{"symbol":
"ACWF"}},"aggs":{"weekly_change":{"date_histogram":
{"field":"date","interval":"week","format":
"yyyy-MM-dd"},"aggs":{"weekly_change":{"sum":
{"field":"change"}},"weekly_change_unweightedAvg":
{"moving_fn":{"buckets_path":"weekly_change",
"script":"MovingFunctions.unweightedAvg(values)",
"window":4}}}}}'
```

POST

cf_etf_hist_price_acwf_moving_fn_linearweightedAvg

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query": {"match": {"symbol": "ACWF"}},
  "aggs": {
    "monthly_change": {
      "date_histogram": {
        "field": "date",
        "interval": "week",
```

```

        "format": "yyyy-MM-dd"
    },
    "aggs": {
        "weekly_change": {
            "sum":
{"field": "change"}

        },
        "weekly_change_unweightedAvg":
{
            "moving_fn": {

"buckets_path": "weekly_change",

"script": "MovingFunctions.linearWeightedAvg(values)",
            "window": 4

        }

    }

}

}

}

}

```

Example Request

`cf_etf_hist_price_acwf_moving_fn_linearweightedAvg`

```

curl --location --request POST "http://localhost:9200/
cf_etf_hist_price/_search" --header "Content-Type:
application/json" --header "accept: application/json" --
data '${\"size\":0,\"query\":{\"match\":{\"symbol\":
\"ACWF\"}},\"aggs\":{\"weekly_change\":{\"date_histogram\":
{\"field\":\"date\",\"interval\":\"week\",\"format\":
\"yyyy-MM-dd\"},\"aggs\":{\"weekly_change\":{\"sum\":
{\"field\":\"change\"}},\"weekly_change_unweightedAvg\":
{\"moving_fn\":{\"buckets_path\":\"weekly_change\",

```

```
\\"script\\":\\"MovingFunctions.unweightedAvg(values)\\",  
\\"window\\":4}}}}}'
```

POST cf_etf_hist_price_acwf_moving_fn_stdDev

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{  
  "size": 0,  
  "query":{"match": {"symbol":"ACWF"}},  
  "aggs":{  
    "monthly_change": {  
      "date_histogram":{  
        "field": "date",  
        "interval": "week",  
        "format": "yyyy-MM-dd"  
      },  
      "aggs": {  
        "weekly_change":{  
          "sum":  
{"field":"change"}  
        },  
        "weekly_change_stdDev": {  
          "moving_fn":{
```

```
"buckets_path": "weekly_change",

"script": "MovingFunctions.stdDev(values,
MovingFunctions.unweightedAvg(values))",

"window": 4

}

}

}

}

}
```

Example Request

cf_etf_hist_price_acwf_moving_fn_stdDev

```
curl --location --request POST "http://localhost:9200/cf_etf_hist_price/_search" --header "Content-Type: application/json" --header "accept: application/json" --data '{"size":0,"query":{"match":{"symbol":"ACWF"}},"aggs":{"monthly_change":{"date_histogram":{"field":"date","interval":"week","format":"yyyy-MM-dd"},"aggs":{"weekly_change":{"sum":{"field":"change"}},"weekly_change_stdDev":{"moving_fn":{"buckets_path":"weekly_change"},"script":"MovingFunctions.stdDev(values,MovingFunctions.unweightedAvg(values))"},"window":4}}}}}'
```

POST cf_etf_hist_price_acwf_moving_fn_ewma

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query": {"match": {"symbol": "ACWF"}},
  "aggs": {
    "monthly_change": {
      "date_histogram": {
        "field": "date",
        "interval": "week",
        "format": "yyyy-MM-dd"
      },
      "aggs": {
        "weekly_change": {
          "sum":
{"field": "change"}
        },
        "weekly_change_ewma": {
          "moving_fn": {
"buckets_path": "weekly_change",
"script": "MovingFunctions.ewma(values, 0.3)",
"window": 4
          }
        }
      }
    }
  }
}
```

```
}  
}
```

Example Request

cf_etf_hist_price_acwf_moving_fn_ewma

```
curl --location --request POST "http://localhost:9200/  
cf_etf_hist_price/_search" --header "Content-Type:  
application/json" --header "accept: application/json" --  
data '${"size":0,"query":{"match":{"symbol":  
"ACWF"}}, "aggs":{"monthly_change":  
{"date_histogram":{"field":"date","interval":  
"week","format":"yyyy-MM-dd"},"aggs":  
{"weekly_change":{"sum":{"field":"change"}},  
"weekly_change_ewma":{"moving_fn":{"buckets_path":  
"weekly_change","script":"MovingFunctions.ewma(values,  
0.3)"}, "window":4}}}}}'
```

POST cf_etf_hist_price_acwf_moving_fn_holt

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query": {"match": {"symbol": "ACWF"}},
  "aggs": {
    "monthly_change": {
      "date_histogram": {
        "field": "date",
        "interval": "week",
        "format": "yyyy-MM-dd"
      },
      "aggs": {
        "weekly_change": {
          "sum":
{"field": "change"}

        },
        "weekly_change_holt": {
          "moving_fn": {

"buckets_path": "weekly_change",

"script": "MovingFunctions.holt(values, 0.3, 0.3)",
                                "window": 4

          }
        }
      }
    }
  }
}
```

Example Request

cf_etf_hist_price_acwf_moving_fn_holt

```
curl --location --request POST "http://localhost:9200/
cf_etf_hist_price/_search" --header "Content-Type:
```



```
application/json" --header "accept: application/json" --
data '${"\size\:0,\\"query\":{\\"match\":{\\"symbol\":
\\"ACWF\\"}},\\"aggs\":{\\"monthly_change\:
{\\"date_histogram\":{\\"field\":\\"date\\",\\"interval\":
\\"week\\",\\"format\":\\"yyyy-MM-dd\\"},\\"aggs\":
{\\"weekly_change\":{\\"sum\":{\\"field\":\\"change\\"}},
\\"weekly_change_holt\":{\\"moving_fn\":{\\"buckets_path\":
\\"weekly_change\\",\\"script\":\\"MovingFunctions.holt(values,
0.3,0.3)\\",\\"window\":4}}}}}'
```

POST cf_etf_hist_price_acwf_moving_fn_holtwinters

http://localhost:9200/cf_etf_hist_price/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "size": 0,
  "query": {"match": {"symbol": "ACWF"}},
  "aggs": {
    "monthly_change": {
      "date_histogram": {
        "field": "date",
        "interval": "week",
        "format": "yyyy-MM-dd"
      },
      "aggs": {
```

```

        "weekly_change":{
            "sum":
{"field":"change"}
        },
        "weekly_change_holtWinters": {
            "moving_fn":{

"buckets_path":"weekly_change",
            "script":"
MovingFunctions.holtWinters(values, 0.8, 0.3, 0.1, 1,
false)",
            "window":4
        }
    }
}

```

Example Request

cf_etf_hist_price_acwf_moving_fn_holtwinters

```

curl --location --request POST "http://localhost:9200/
cf_etf_hist_price/_search" --header "Content-Type:
application/json" --header "accept: application/json" --
data '${"\size\: 0, \"query\":{ \"match\":{ \"symbol\":
\"ACWF\"}}, \"aggs\":{ \"monthly_change\:
{ \"date_histogram\":{ \"field\": \"date\", \"interval\":
\"week\", \"format\": \"yyyy-MM-dd\"}, \"aggs\":
{ \"weekly_change\":{ \"sum\":{ \"field\": \"change\"}},
\"weekly_change_holtWinters\":{ \"moving_fn\:
{ \"buckets_path\": \"weekly_change\", \"script\:
\"MovingFunctions.holtWinters(values,0.8,0.3,0.1,1,false)
\", \"window\:4}}}}}}}'

```

POST cf_etf_hist_price_terms_rating post_filter

http://localhost:9200/cf_etf/_search

HEADERS

Content-Type

application/json

accept

application/json

BODY

```
{
  "aggs": {
    "terms_on_rating": {
      "terms": {
        "field": "rating"
      }
    }
  },
  "post_filter": {
    "range": {
      "rating": {"gte": 5}
    }
  }
}
```

Example Request

cf_etf_hist_price_terms_rating post_filter

```
curl --location --request POST "http://localhost:9200/
```

```
cf_etf/_search" --header "Content-Type: application/json"  
--header "accept: application/json" --data $'{"aggs":  
{"terms_on_rating":{"terms":{"field":"rating"}}},  
"post_filter":{"range":{"rating":{"gte":5}}}}'
```

CHAPTER8