

# Chapter 8 – Aggregation Framework

## Example Request - IEX\_ACWF\_chart\_3m

GET IEX\_ACWF\_chart\_3m

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

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

## Example Request - cf\_etf\_historical\_prices\_mapping

GET `http://localhost:9200/cf_etf_hist_price/`

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

## Example Request - cf\_etf\_historical\_prices document\_count

GET `http://localhost:9200/cf_etf_hist_price/_count`

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

## Example Request - cf\_etf\_hist\_price\_document\_search\_all

POST `http://localhost:9200/cf_etf_hist_price/_search`

### HEADERS

Content-Type  
application/json

### BODY

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

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

## Example Request - cf\_etf\_hist\_price\_matrix\_stats

POST `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"]
        }
      }
    }
  }
```

```
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\"] } } } }'
```

#### Example Request - count\_cf\_etf\_hist\_price\_index\_document

**GET** http://localhost:9200/cf\_etf\_hist\_price/\_count

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

#### Example Request - delete\_cf\_etf\_hist\_price\_index

**DEL** http://localhost:9200/cf\_etf\_hist\_price/

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

#### Example Request - cf\_etf\_hist\_price\_avg\_acwf\_change

**POST** 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" } } }
  }
```

```
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\"}}}}'
```

### Example Request - cf\_etf\_hist\_price\_weight\_avg\_acwf\_change

**POST** 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"}
      }
    }
  }
}
```

```
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"} } } } }'
```

### Example Request - cf\_etf\_morningstar\_categories\_cardinality

**POST** 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"}
    }
  }
}
```

```
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"} } } }'
```

### Example Request - cf\_etf\_market\_cap\_value\_count

**POST** 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"}
    }
  }
}
```

```
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\" } } }'}
```

### Example Request - cf\_etf\_dividend\_acwf\_amount\_sum

**POST** 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"}
    }
  }
}
```

```
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\" } } }'}
```

### Example Request - cf\_etf\_hist\_price\_acwf\_minimum\_open\_price

**POST** 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"}
    }
  }
}
```

```
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" } } } }'
```

### Example Request - cf\_etf\_hist\_price\_acwf\_maximum\_open\_price

**POST** 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"}
    }
  }
}
```

```
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" } } } }'
```

### Example Request - cf\_etf\_hist\_price\_acwf\_stats\_open\_price

**POST** 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"}
    }
  }
}
```

```
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\"} } } }'
```

**Example Request - cf\_etf\_hist\_price\_acwf\_extended\_stats\_open\_price**

**POST** 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"}
    }
  }
}
```

```
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\"} } } }'
```

**Example Request - cf\_etf\_top\_hit\_morningstar\_category**

**POST** 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": {}
        }
      }
    }
  }
}
```

```
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": {} } } } } } }
```

### Example Request - cf\_etf\_hist\_price\_percentiles\_open\_price

**POST** 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" }
    }
  }
}
```

```
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" } } } }
```

### Example Request - cf\_etf\_hist\_price\_percentile\_rank\_open\_price

**POST** 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 }  
    }  
  }  
}
```

```
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 } } } }'
```

### Example Request - cf\_etf\_hist\_price\_mad\_acwf\_percetChange

**POST** 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" }  
    }  
  }  
}
```



```
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"}}}}'
```

### Example Request - cf\_etf\_hist\_price\_scripted\_metric

**POST** 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)"
      }
    }
  }
}
```

```
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)" } } } }'
```

### Example Request - cf\_etf\_hist\_price\_acwf\_histogram

**POST** 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}
      }
    }
  }
}
```

```
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} } } } }'
```

### Example Request - cf\_etf\_hist\_price\_acwf\_date\_histogram

**POST** 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"
      }
    }
  }
}
```

```
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\" } } } }'
```

### Example Request - cf\_etf\_hist\_price\_acwf\_auto\_interval\_date\_histogram

**POST** 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"
      }
    }
  }
}
```

```
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" } } } }'
```

### Example Request - cf\_etf\_hist\_price\_acwf\_ranges

**POST** 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"}]
      }
    }
  }
}
```

```
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": { "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\_date\_ranges

**POST** 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" } ]
      }
    }
  }
}
```

```
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" } ] } } } }'
```

### Example Request - cf\_etf\_hist\_price\_filter\_sub\_aggs

**POST** 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"}}}}
    }
  }
}

```

```

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"}}}} } } }'

```

### Example Request - cf\_etf\_hist\_price\_filters

**POST** 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}}}
        }
      }
    }
  }
}

```

```

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}}} } } } }'

```

### Example Request - cf\_etf\_hist\_price\_terms\_rating

**POST** http://localhost:9200/cf\_etf/\_search

#### HEADERS

Content-Type  
application/json  
accept  
application/json

#### BODY

```
{
  "size": 0,
  "aggs": {
    "terms_on_rating": {
      "terms": {
        "field": "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\" } } } }'
```

### Example Request - cf\_etf\_hist\_price\_significant\_terms

**POST** 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"
      }
    }
  }
}
```

```
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\" } } } }'
```

### Example Request - cf\_etf\_hist\_price\_significant\_text

**POST** 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
      }
    }
  }
}
```

```
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 } } } }'
```

### Example Request - cf\_etf\_hist\_price\_sampler

**POST** 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"
          }
        }
      }
    }
  }
}
```

```
}  
}
```

```
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" } } } } }'
```

### Example Request - cf\_etf\_hist\_price\_diversified\_sampler\_10

**POST** 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"  
          }  
        }  
      }  
    }  
  }  
}
```

```
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" } } } } }'
```

### Example Request - cf\_etf\_hist\_price\_diverified\_sampler\_61

**POST** 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"
                    }
                }
            }
        }
    }
}

```

```

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" } } } } } }'

```

### Example Request - cf\_etf\_dividend\_nested\_amount

**POST** 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"}}
                    }
                }
            }
        }
    }
}

```

```

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_a
mount": { "sum": { "field": "announcement.amount" } } } } } } } }'

```

### Example Request - cf\_etf\_dividend\_reverse\_nested

**POST** 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"}}
              }
            }
          }
        }
      }
    }
  }
}
```

```
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"}} } } } } } } }
```

### Example Request - cf\_etf\_global

**POST** 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"}}}}
  }
}

```

```

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\"}}}} } }'

```

### Example Request - cf\_etf\_missing\_category

**POST** http://localhost:9200/cf\_etf/\_search

#### HEADERS

Content-Type  
application/json

#### BODY

```

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

```

```

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

```

### Example Request - cf\_etf\_composite

**POST** 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
    }
}

```

```

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\"} } } ], \"size\": 5 } } } }'

```

### Example Request - cf\_etf\_adjacent\_matrix

**POST** 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"}}
                }
            }
        }
    }
}

```

```

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\"} } } } } } }'

```

### Example Request - cf\_etf\_dividend\_join\_parent\_aggs

**POST** 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" } }
      }
    }
  }
}
```

```
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\\"}}}}}}\''
```

#### Example Request - cf\_etf\_dividend\_join\_children\_aggs

**POST** 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" } } } }
    }
  }
}
```

```
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\\"}}}}}}}}\''
```

#### Example Request - cf\_etf\_hist\_price\_acwf\_avg\_monthly\_close

**POST** 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"
      }
    }
  }
}
```

```
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" } } } }'
```

### Example Request - cf\_etf\_hist\_price\_acwf\_max\_monthly\_avg\_close

**POST** 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"
    }
}
}
}

```

```

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" } } } }'

```

### Example Request - cf\_etf\_hist\_price\_acwf\_min\_monthly\_avg\_close

**POST** 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"
            }
        }
    }
}

```

```
}  
}  
}
```

```
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\" } } } }'
```

### Example Request - cf\_etf\_hist\_price\_acwf\_sum\_monthly\_change

**POST** 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"  
      }  
    }  
  }  
}
```

```
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\" } } } }'
```



```
\\"overall_monthly_change\\":{ \\"sum_bucket\\": { \\"buckets_path\\":  
\\\"monthly_change>change_on_month\\\" } } } }'
```

### Example Request - cf\_etf\_hist\_price\_acwf\_statistics\_monthly\_change

**POST** 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"  
      }  
    }  
  }  
}
```

```
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\\\" } } } }'
```

### Example Request - cf\_etf\_hist\_price\_acwf\_extended\_statistics\_monthly\_change

**POST** 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"
      }
    }
  }
}
```

```
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\" } } } }'
```

#### Example Request - cf\_etf\_hist\_price\_acwf\_percentiles\_weekly\_change

**POST** 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"
    }
}
}
}

```

```

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" \
      } \
    } \
  } \
}'

```

### Example Request - cf\_etf\_hist\_price\_acwf\_cumulative\_sum

**POST** 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"
          }
        }
      }
    }
  }
}

```

```

    }
  }
}

```

```

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"}},\n"aggs":{"monthly_change":
{"date_histogram":{"field":"date","interval":"month","format":"yyyy-MM-
dd"},"aggs":{"change_on_month":{"sum":{"field":"change"},"cumulative_chan
ge":{"cumulative_sum":{"buckets_path":"change_on_month"}}}}}}'

```

### Example Request - cf\_etf\_hist\_price\_acwf\_derivative

**POST** 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"
          }
        }
      }
    }
  }
}

```

```

curl --location --request POST "http://localhost:9200/cf_etf_hist_price/_search" --
header "Content-Type: application/json" --header "accept: application/json" --data
$'{"size": 0, \n"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\_bucket\_script

**POST** 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"
          }
        }
      }
    }
  }
}
```

```
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_m
onth\\\":{\\\"min\\\":{\\\"field\\\":\\\"change\\\"}},\\\"max_change_on_month\\\":{\\\"max\\\":{\\\"field\\\":\\\"
change\\\"}},\\\"range_of_change\\\":{\\\"bucket_script\\\":{\\\"buckets_path\\\":{\\\"min_value\\\":\\\"m
```

```
in_change_on_month\"},\"max_value\":\"max_change_on_month\"},\"script\":\"params.max_value - params.min_value\"}}}}}'
```

### Example Request - cf\_etf\_hist\_price\_bucket\_selector

**POST** 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"
          }
        }
      }
    }
  }
}
```

```
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\"}}}}}'
```

### Example Request - cf\_etf\_dividend\_nested\_amount bucket\_sort

**POST** 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"}}
          }
        },
        "sort": {
          "bucket_sort": {
            "sort":
[{"total_dividend.total_amount":{"order":"desc"}}],
            "from":0,
            "size":3
          }
        }
      }
    }
  }
}
```

```
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 } } } } } ' }
```

#### Example Request - cf\_etf\_hist\_price\_acwf\_serial\_diff

**POST** 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
                    }
                }
            }
        }
    }
}

```

```

curl --location --request POST "http://localhost:9200/cf_etf_hist_price/_search" --
header "Content-Type: application/json" --data '${"\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\_moving\_avg\_simple

**POST** 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
    }
  }
}
}
```

```
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 } } } } }
```

### Example Request - cf\_etf\_hist\_price\_acwf\_moving\_avg\_linear

**POST** 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": "linear",
            "window": 4,
            "predict": 4
          }
        }
      }
    }
  }
}
```

```
}
    }
  }
}
```

```
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\": \"linear\",
\"window\": 4, \"predict\": 4 } } } } } }
```

### Example Request - cf\_etf\_hist\_price\_acwf\_moving\_avg\_ewma

**POST** 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": "ewma",
            "settings": {"alpha": 0.3},
            "window": 4,
            "predict": 4
          }
        }
      }
    }
  }
}
```

```
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}}}}}'
```

### Example Request - cf\_etf\_hist\_price\_acwf\_moving\_avg\_holt\_linear

**POST** 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
          }
        }
      }
    }
  }
}
```

```
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 } } } } } }'
```

### Example Request - cf\_etf\_hist\_price\_acwf\_moving\_avg\_holt\_winters

**POST** 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
          }
        }
      }
    }
  }
}
```

```
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
            }
          }
        }
      }
    }
  }
}
```

### Example Request - cf\_etf\_hist\_price\_acwf\_moving\_fn\_max

**POST** 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"}
        },
        "max_weekly_change": {
          "moving_fn": {
            "buckets_path": "weekly_change",
            "script": "MovingFunctions.max(values)",
            "window": 4
          }
        }
      }
    }
  }
}
```

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

#### Example Request - cf\_etf\_hist\_price\_acwf\_moving\_fn\_min

**POST** 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
            }
          }
        }
      }
    }
  }
}

```

```

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
          }
        }
      }
    }
  }
}'

```

### Example Request - cf\_etf\_hist\_price\_acwf\_moving\_fn\_sum

**POST** 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":{

```

```
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 } } } } }
```

```
{
  "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(val
ues)",
            "window": 4
          }
        }
      }
    }
  }
}
```

```

    }
  }
}

```

```

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}}}}}}'

```

### Example Request - cf\_etf\_hist\_price\_acwf\_moving\_fn\_linearweightedAvg

**POST** 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
          }
        }
      }
    }
  }
}

```

```

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}}}}}
```

### Example Request - cf\_etf\_hist\_price\_acwf\_moving\_fn\_stdDev

**POST** 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
          }
        }
      }
    }
  }
}
```

```
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}}}}}}'
```

### Example Request - cf\_etf\_hist\_price\_acwf\_moving\_fn\_ewma

**POST** 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
          }
        }
      }
    }
  }
}
```

```
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"}},\n"aggs":{"monthly_change":
{"date_histogram":{"field":"date","interval":"week","format":"yyyy-MM-
dd"},"aggs":{"weekly_change":{"sum":{"field":"change"}},\n"weekly_change_ewm
a":{"moving_fn":{"buckets_path":"weekly_change","script":"MovingFunctions.ew
ma(values,0.3)","window":4}}}}}'
```

### Example Request - cf\_etf\_hist\_price\_acwf\_moving\_fn\_holt

**POST** 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
            }
          }
        }
      }
    }
  }
}

```

```

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"}},\n"aggs":{"monthly_change":
{"date_histogram":{"field":"date","interval":"week","format":"yyyy-MM-
dd"},"aggs":{"weekly_change":{"sum":{"field":"change"}},\n"weekly_change_ho
lt":{"moving_fn":{"buckets_path":"weekly_change","script":"MovingFunctions.ho
lt(values,0.3,0.3)","window":4}}}}}'

```

### Example Request - cf\_etf\_hist\_price\_acwf\_moving\_fn\_holtwinters

**POST** 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
            }
        }
    }
}

```

```

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_his
togram":{"field":"date","interval":"week","format":"yyyy-MM-
dd"},"aggs":{"weekly_change":{"sum":{"field":"change"}},{"weekly_change_hol
tWinters":{"moving_fn":{"buckets_path":"weekly_change","script":"MovingFunct
ions.holtWinters(values,0.8,0.3,0.1,1,false)","window":4}}}}}}'

```

### Example Request - cf\_etf\_hist\_price\_terms\_rating post\_filter

**POST** 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}
    }
  }
}

```

```

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}}}}'

```

