Elastic Stack을 활용한 Data Dashboard 만들기

Week 3 - 데이터를 검색/필터링 해보자

Fast Campus

Scripted Field

String Concatenation 연산은 안되나?

Field 간 연산은 안되나?

Date Field에서 연/월/일/시/분/초 등 접근 안되나?

기존 Field에 조건을 적용해서 새로운 Field를 만들 수 없나?

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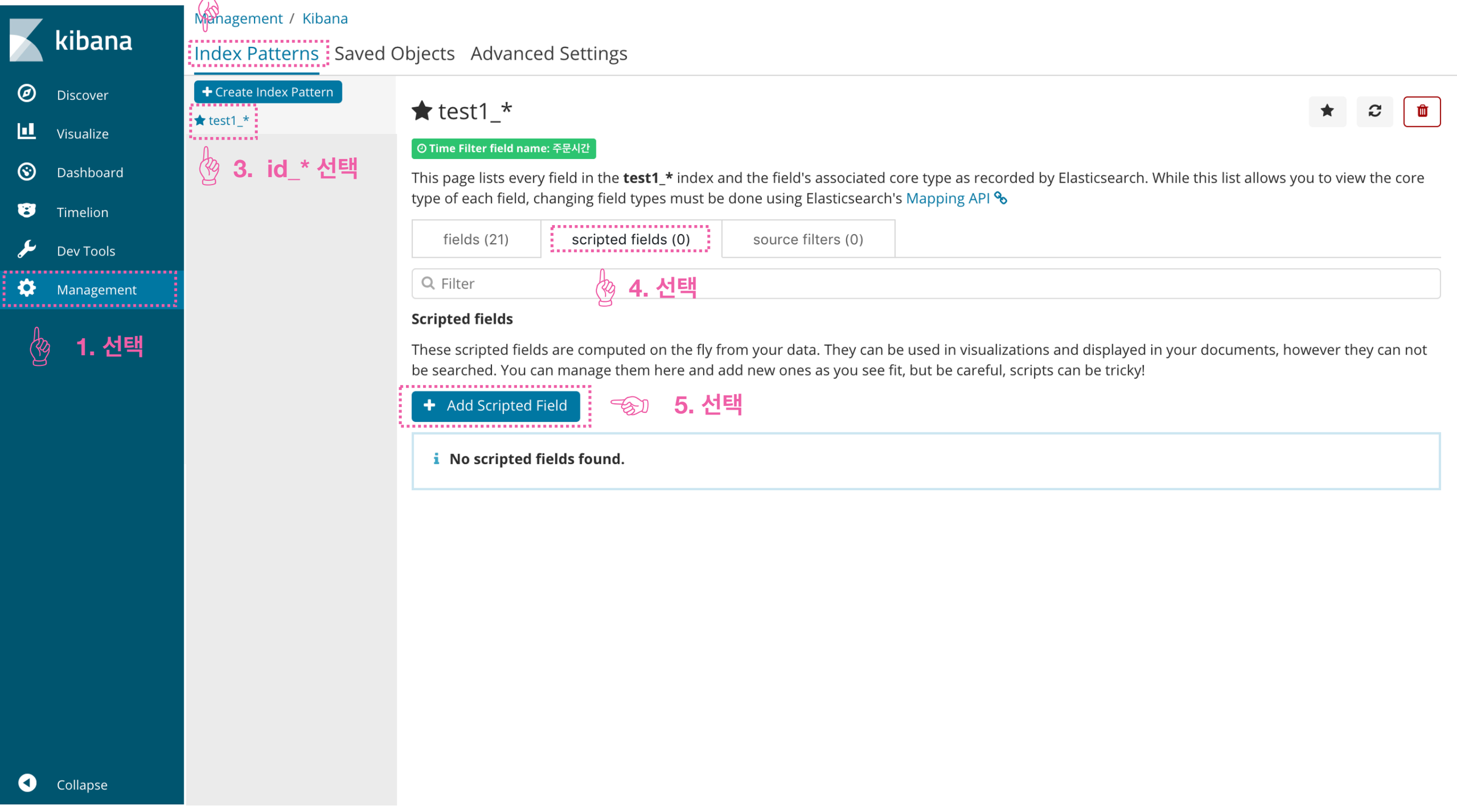
예시

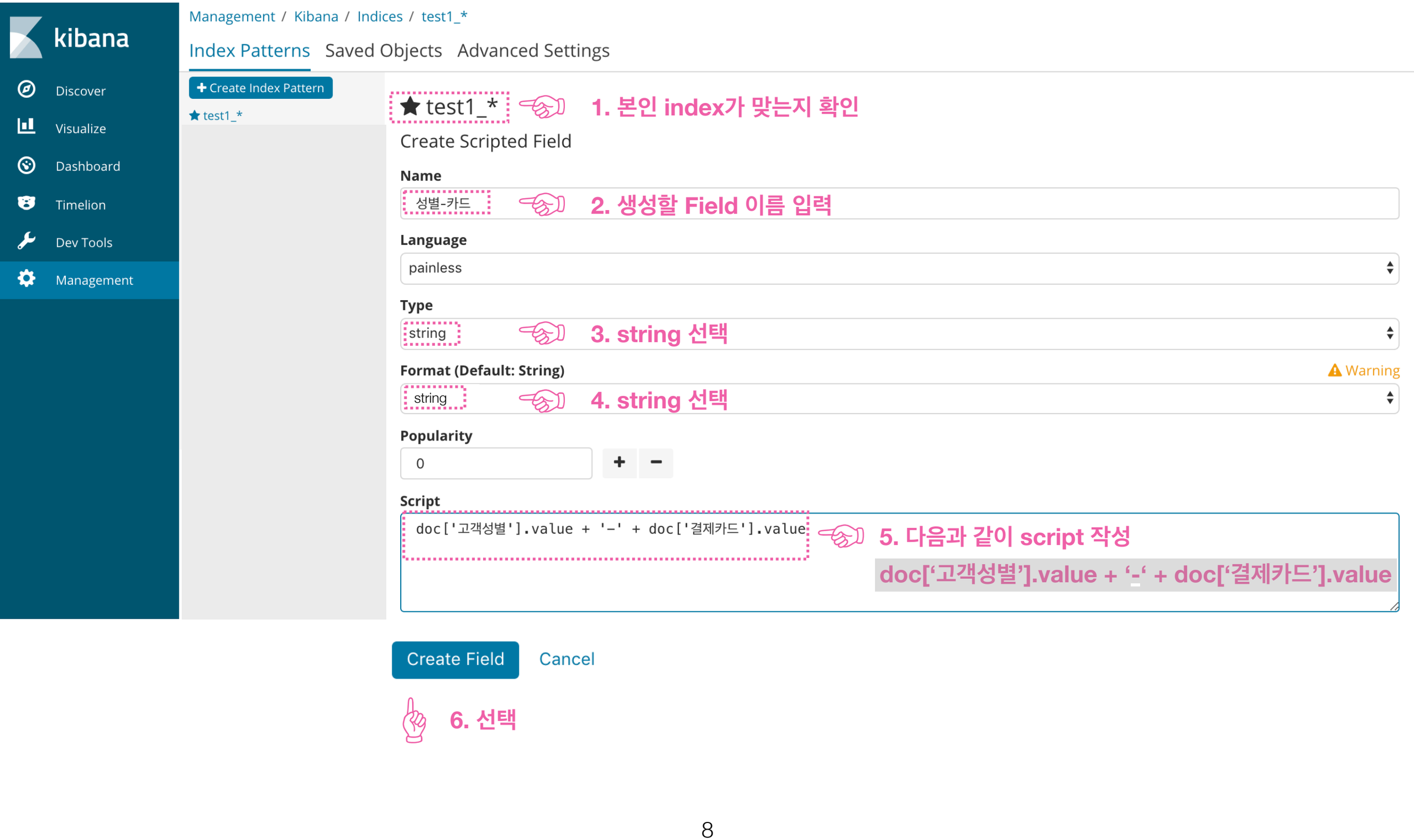
특정한 두 개 혹은 그 이상의 Field를 합쳐서

하나의 Field를 만들고 싶으면 어떻게 해야할까?

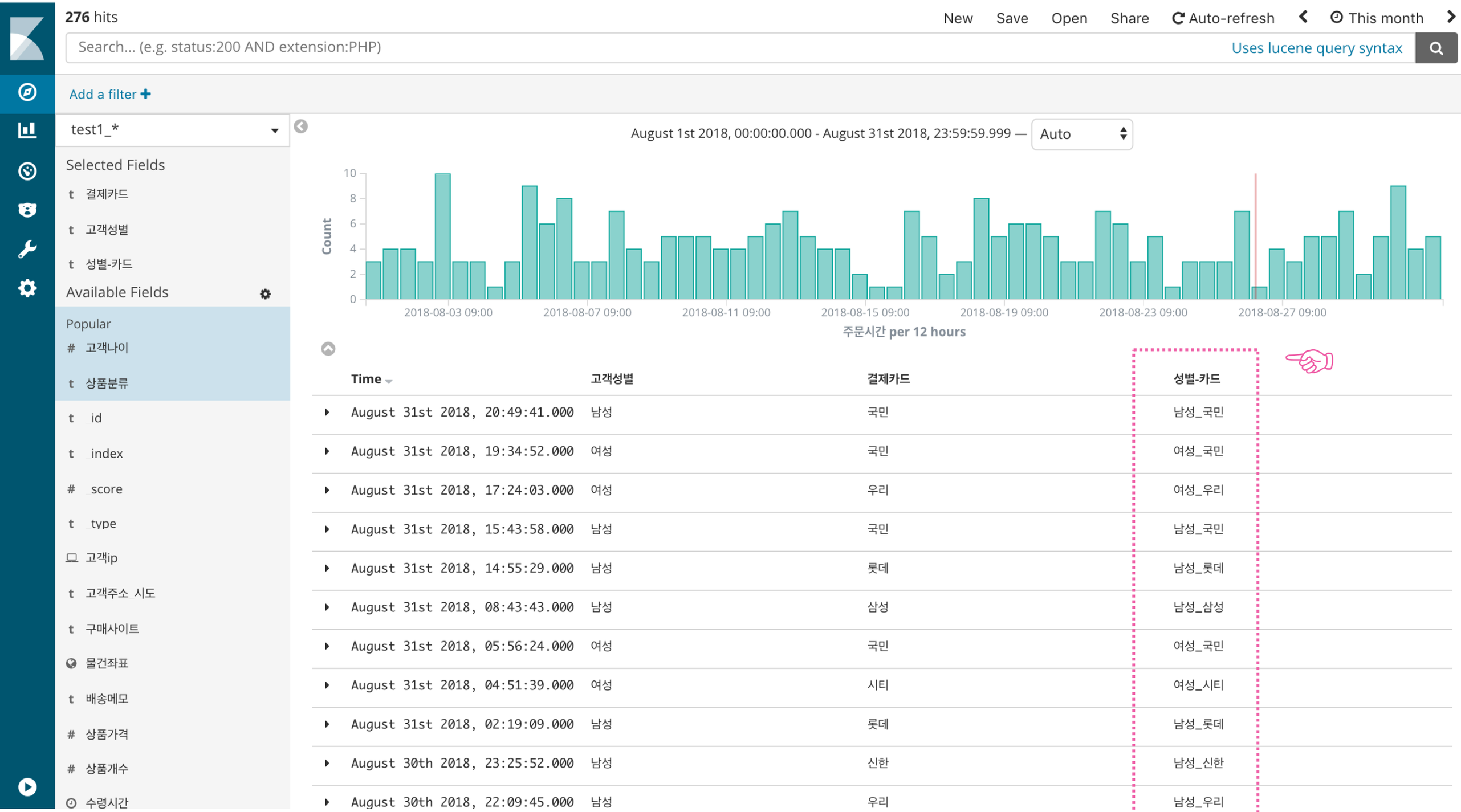
scripted field를 추가하자



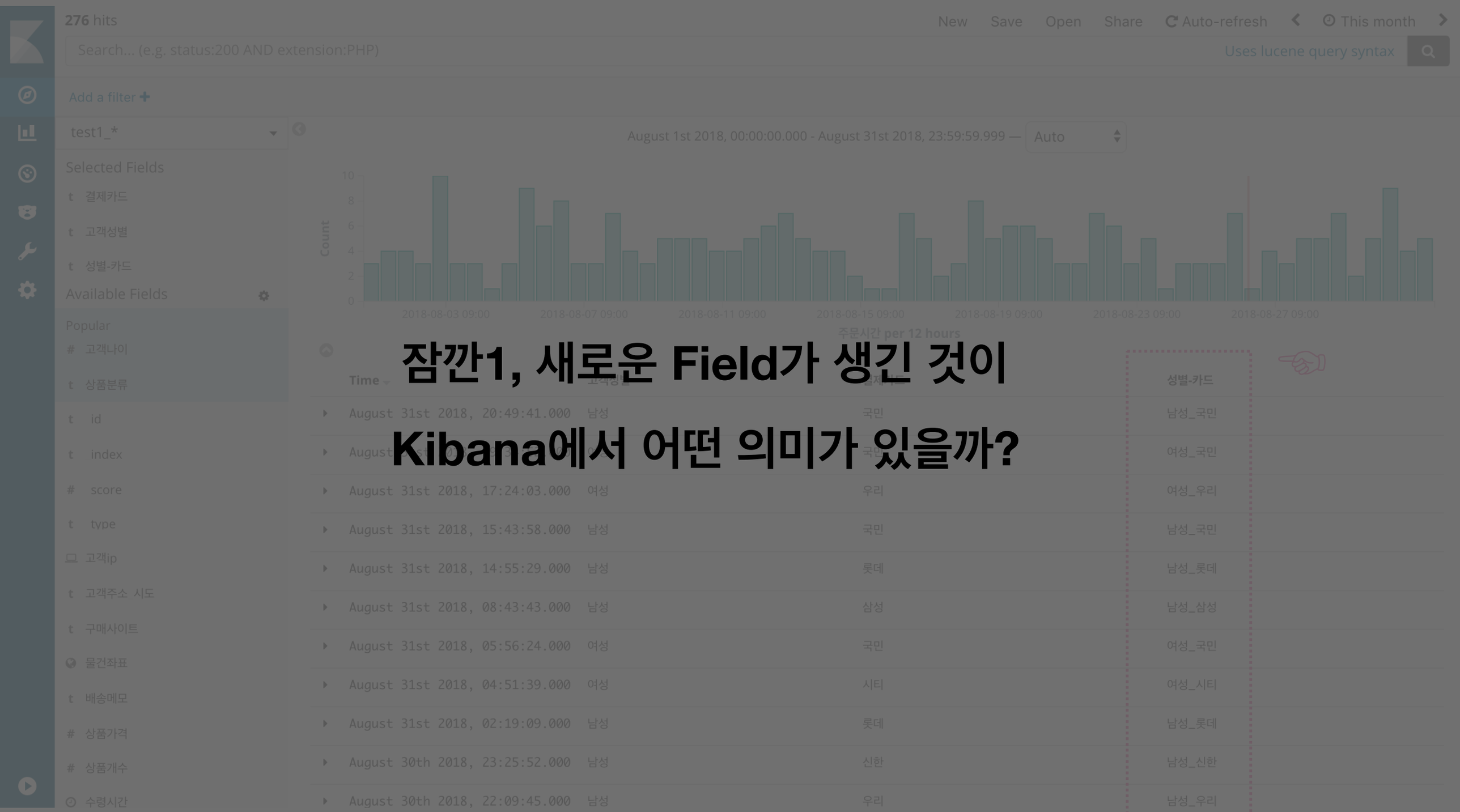
script를 작성하자 ♕



Discover에 가서 확인하자



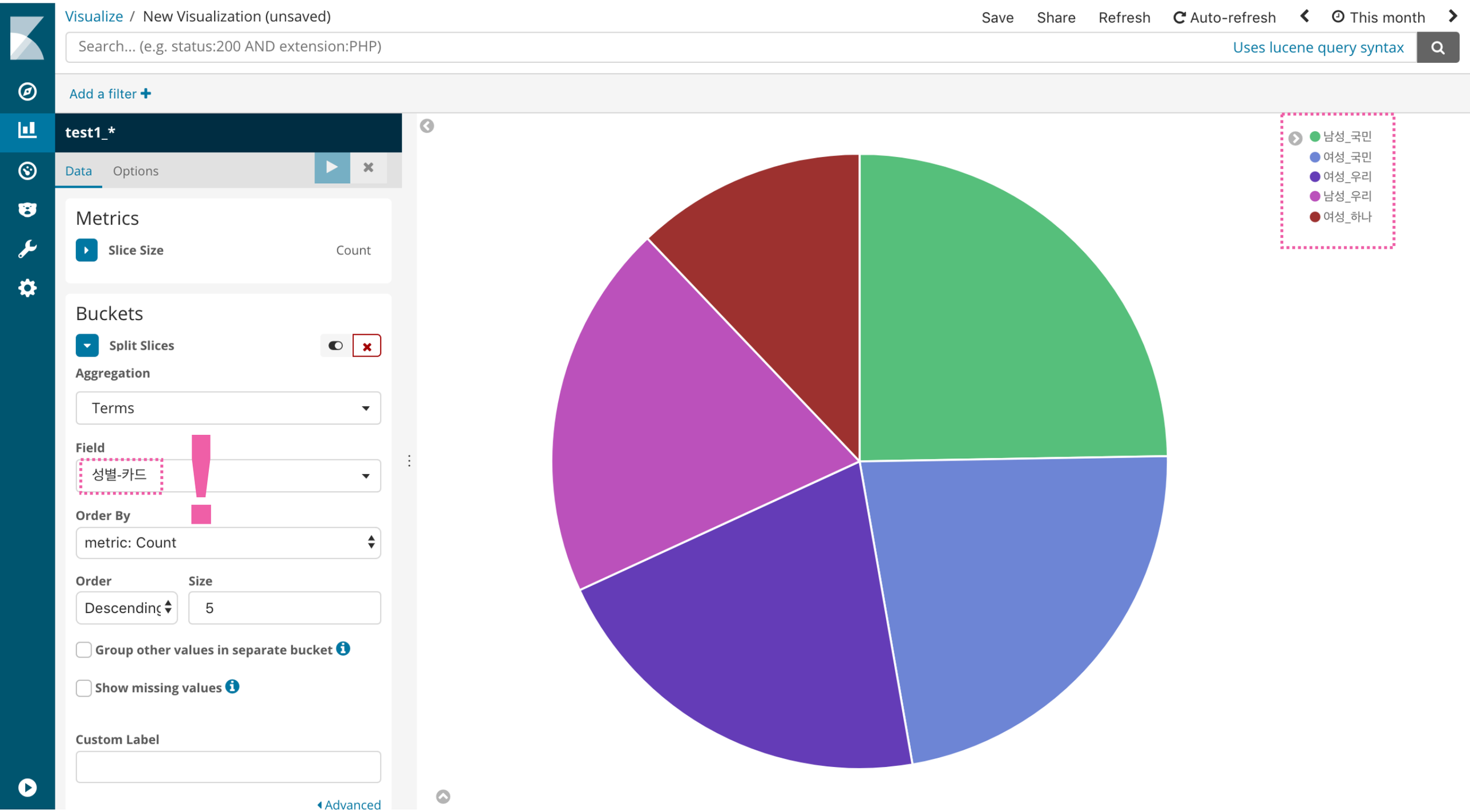
Discover에 가서 확인하자



잠깐1, 새로운 Field가 생긴 것이

Kibana에서 어떤 의미가 있을까?

방금 생성한 Field를 이용하여 Visualization을 생성할 수 있다는 것이다



String Concatenation 연산은 안되나?

Field 간 연산은 안되나?

Date Field에서 연/월/일/시/분/초 등 접근 안되나?

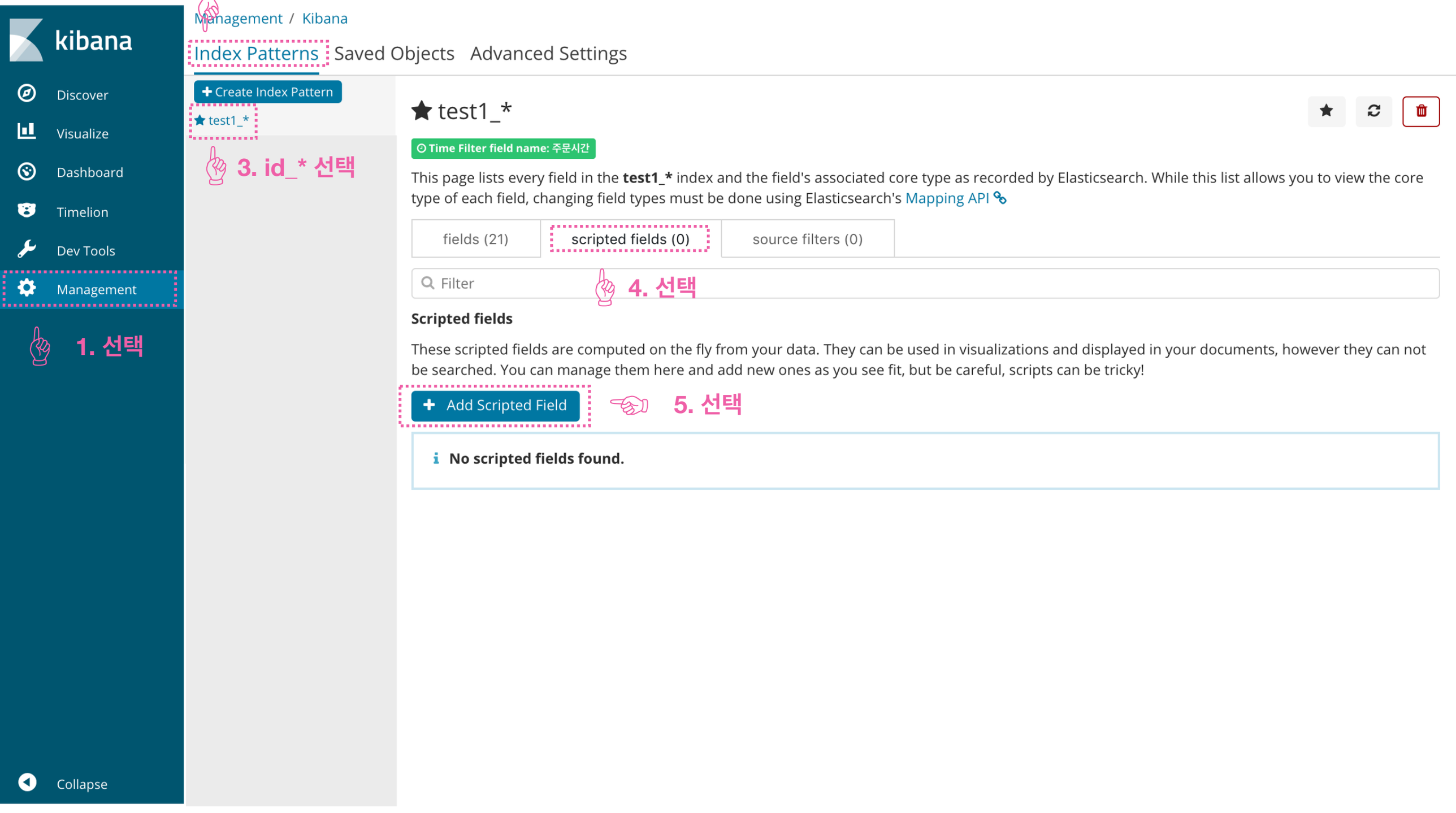
기존 Field에 조건을 적용해서 새로운 Field를 만들 수 없나?

예시

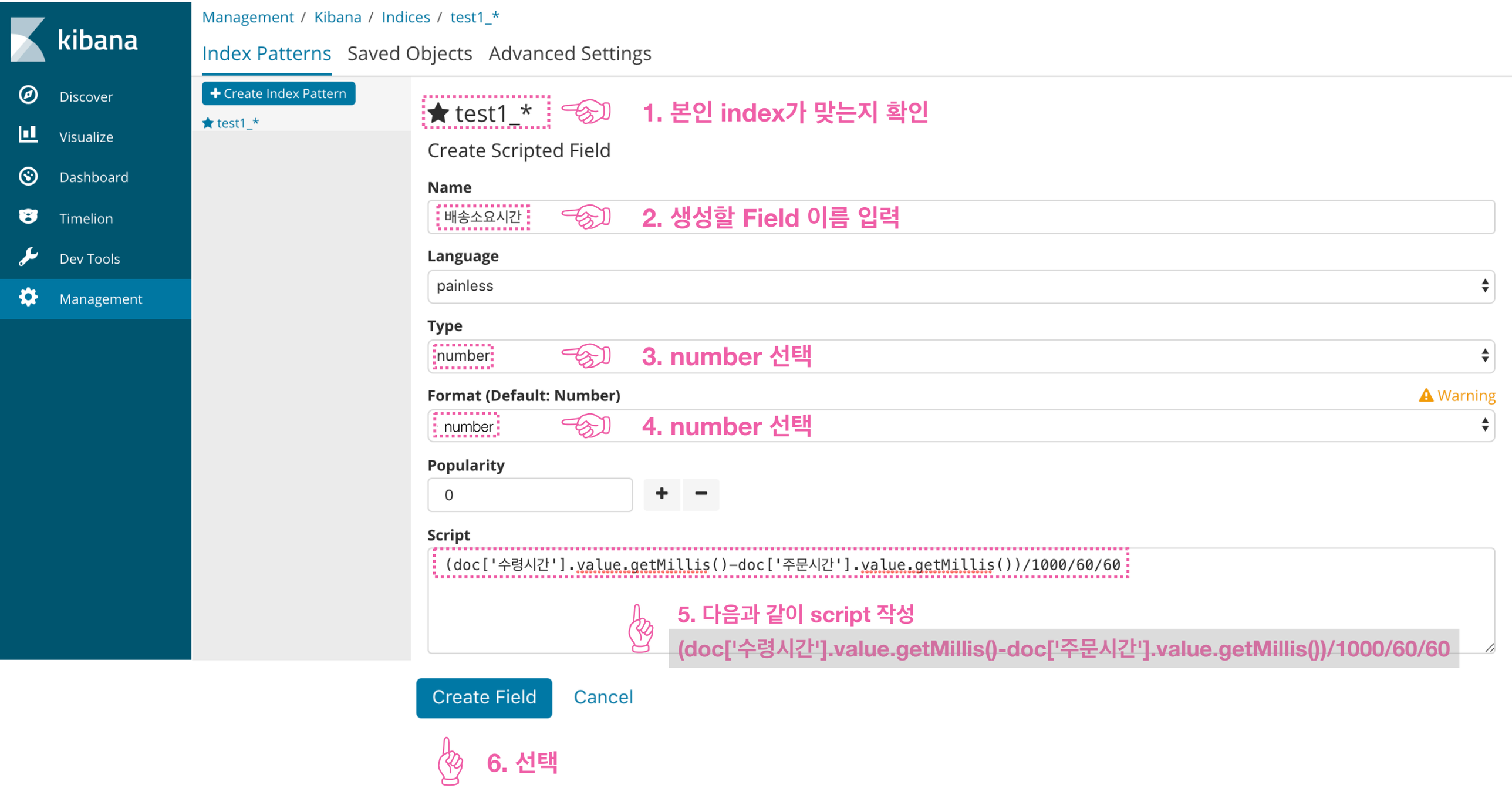
2개의 Date Field 값의 차이를 통해

특정한 event의 처리시간을 구하고 싶다면?

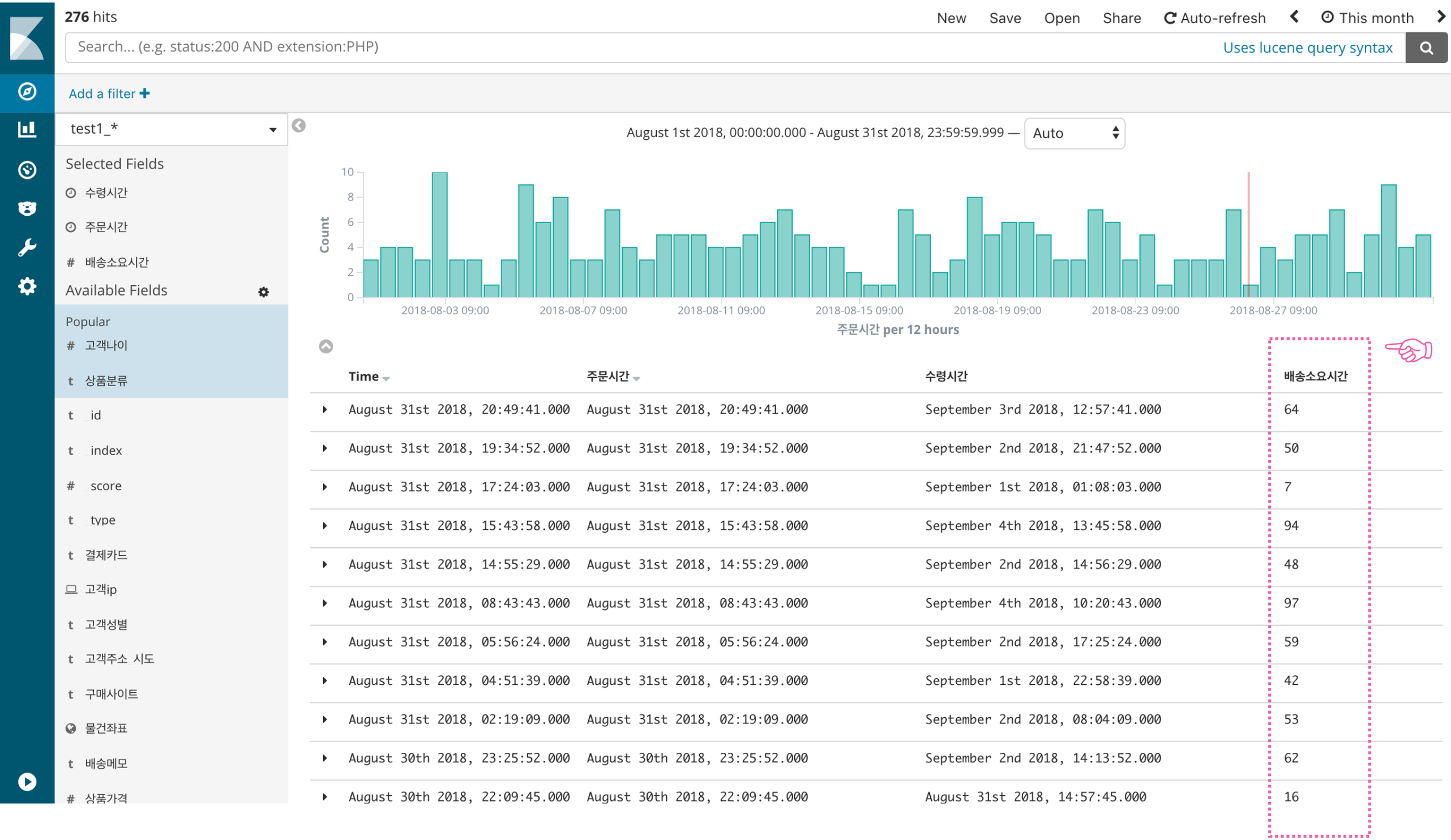
scripted field를 추가하자



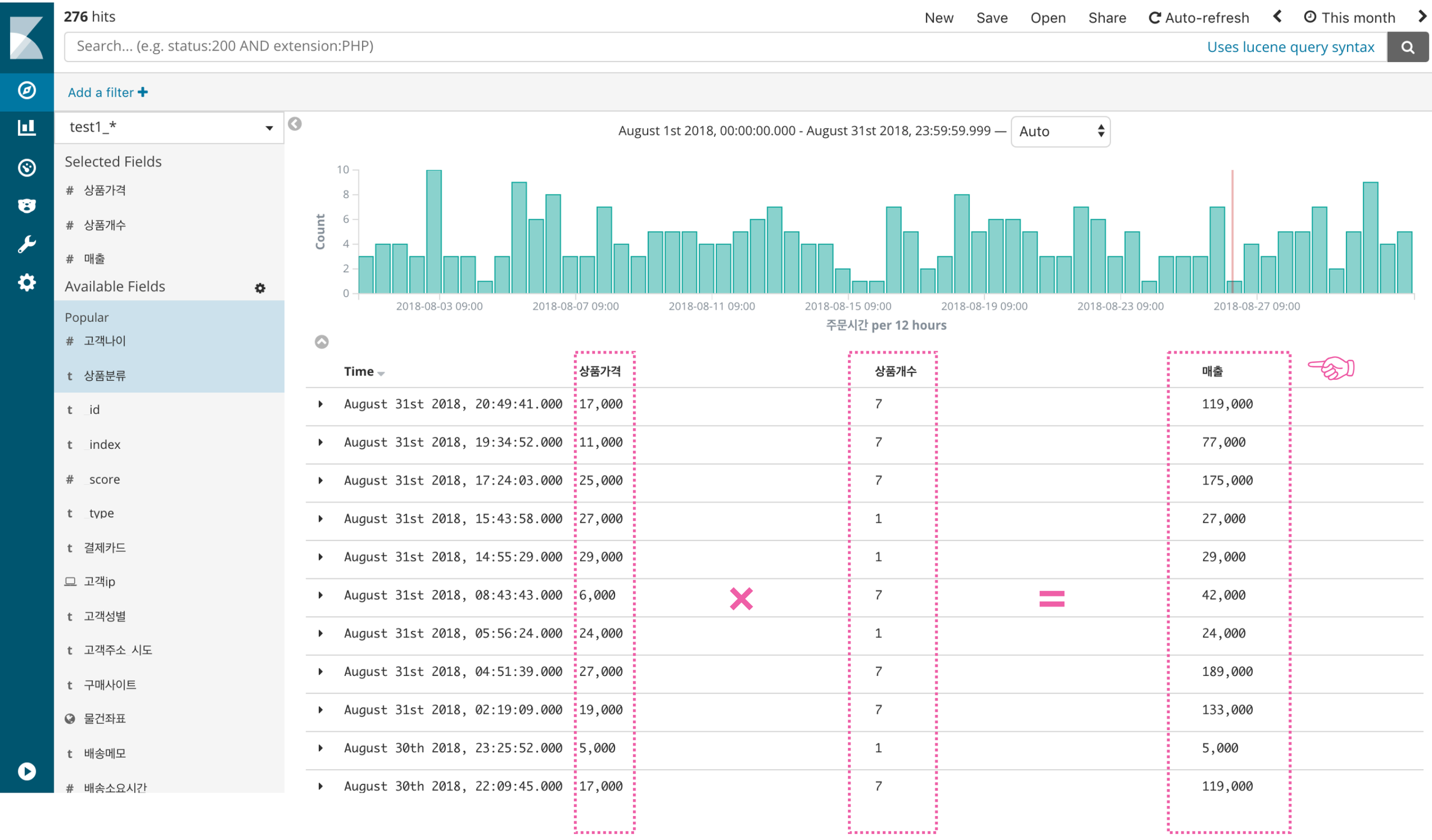
script를 작성하자 👑



Discover에 가서 확인하자



예제 1 - Scripted Field 👑



String Concatenation 연산은 안되나?

Field 간 연산은 안되나?

Date Field에서 연/월/일/시/분/초 등 접근 안되나? 

기존 Field에 조건을 적용해서 새로운 Field를 만들 수 없나?

예시

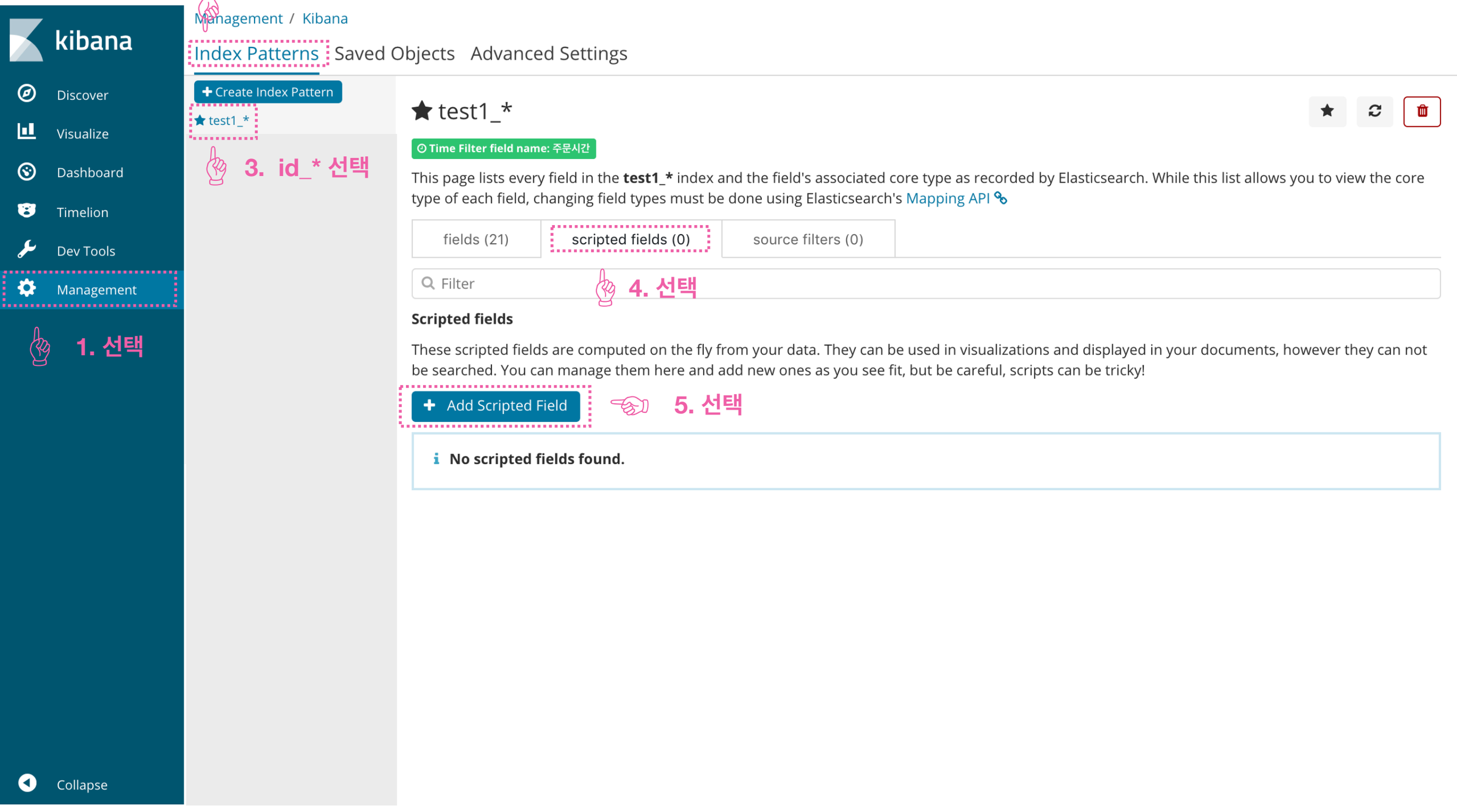
특정 Date Field에서 시간대 및 요일 등을 추출해서

요일 별 시간대 별 Heat Map을 시각화 하고 싶을 때 사용!

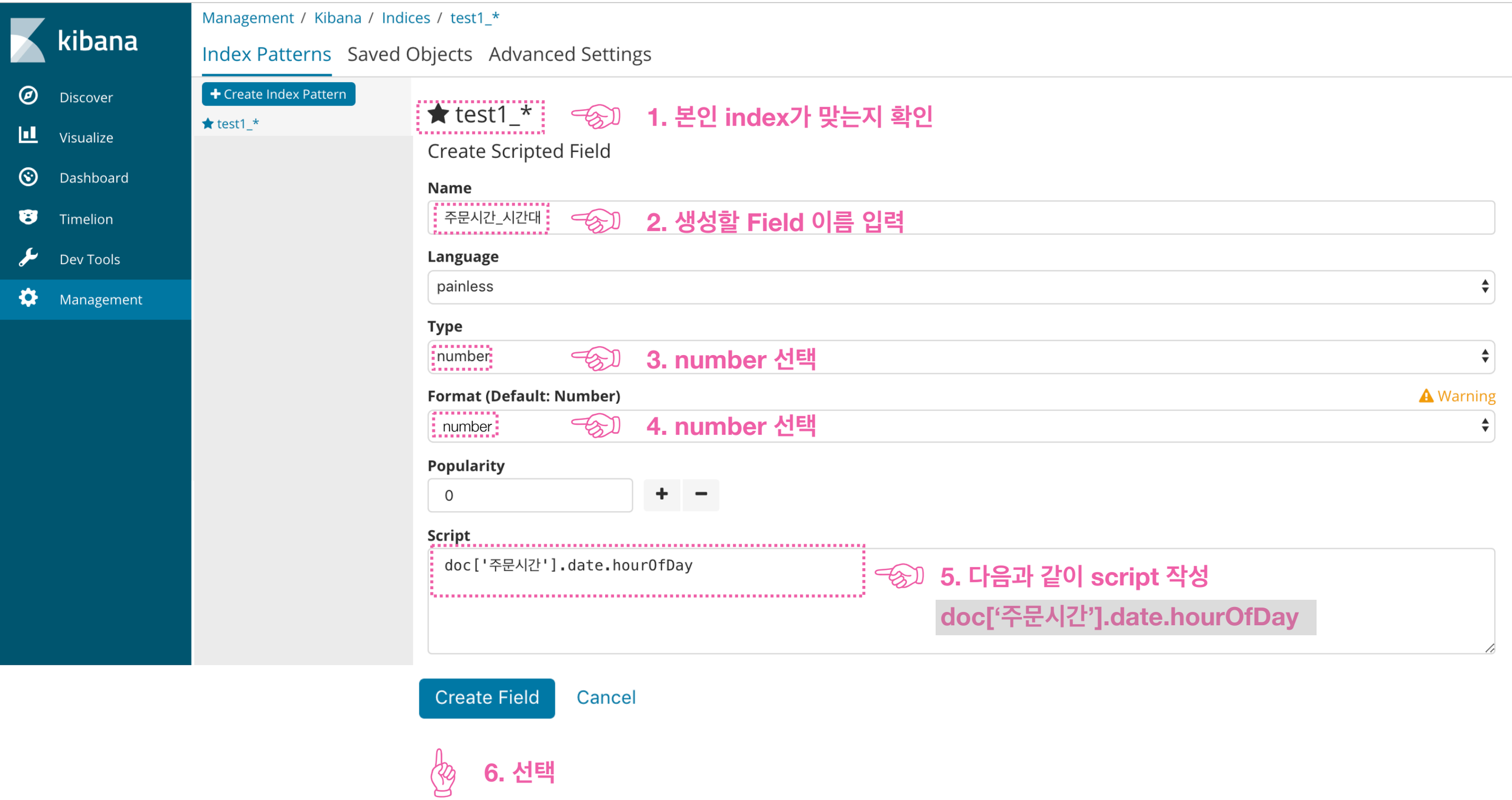
Lucene Expression을 이용하면 날짜 관련 정보를 쉽게 추출할 수 있다 👑

Expression	Description
`doc['field_name'].date.centuryOfEra`	Century (1-2920000)
`doc['field_name'].date.dayOfMonth`	Day (1-31), e.g. `1` for the first of the month.
`doc['field_name'].date.dayOfWeek`	Day of the week (1-7), e.g. `1` for Monday.
`doc['field_name'].date.dayOfYear`	Day of the year, e.g. `1` for January 1.
`doc['field_name'].date.era`	Era: `0` for BC, `1` for AD.
`doc['field_name'].date.hourOfDay`	Hour (0-23).
`doc['field_name'].date.millisOfDay`	Milliseconds within the day (0-86399999).
`doc['field_name'].date.millisOfSecond`	Milliseconds within the second (0-999).
`doc['field_name'].date.minuteOfDay`	Minute within the day (0-1439).
`doc['field_name'].date.minuteOfHour`	Minute within the hour (0-59).
`doc['field_name'].date.monthOfYear`	Month within the year (1-12), e.g. `1` for January.
`doc['field_name'].date.secondOfDay`	Second within the day (0-86399).
`doc['field_name'].date.secondOfMinute`	Second within the minute (0-59).
`doc['field_name'].date.year`	Year (-292000000 - 292000000).
`doc['field_name'].date.yearOfCentury`	Year within the century (1-100).
`doc['field_name'].date.yearOfEra`	Year within the era (1-292000000).

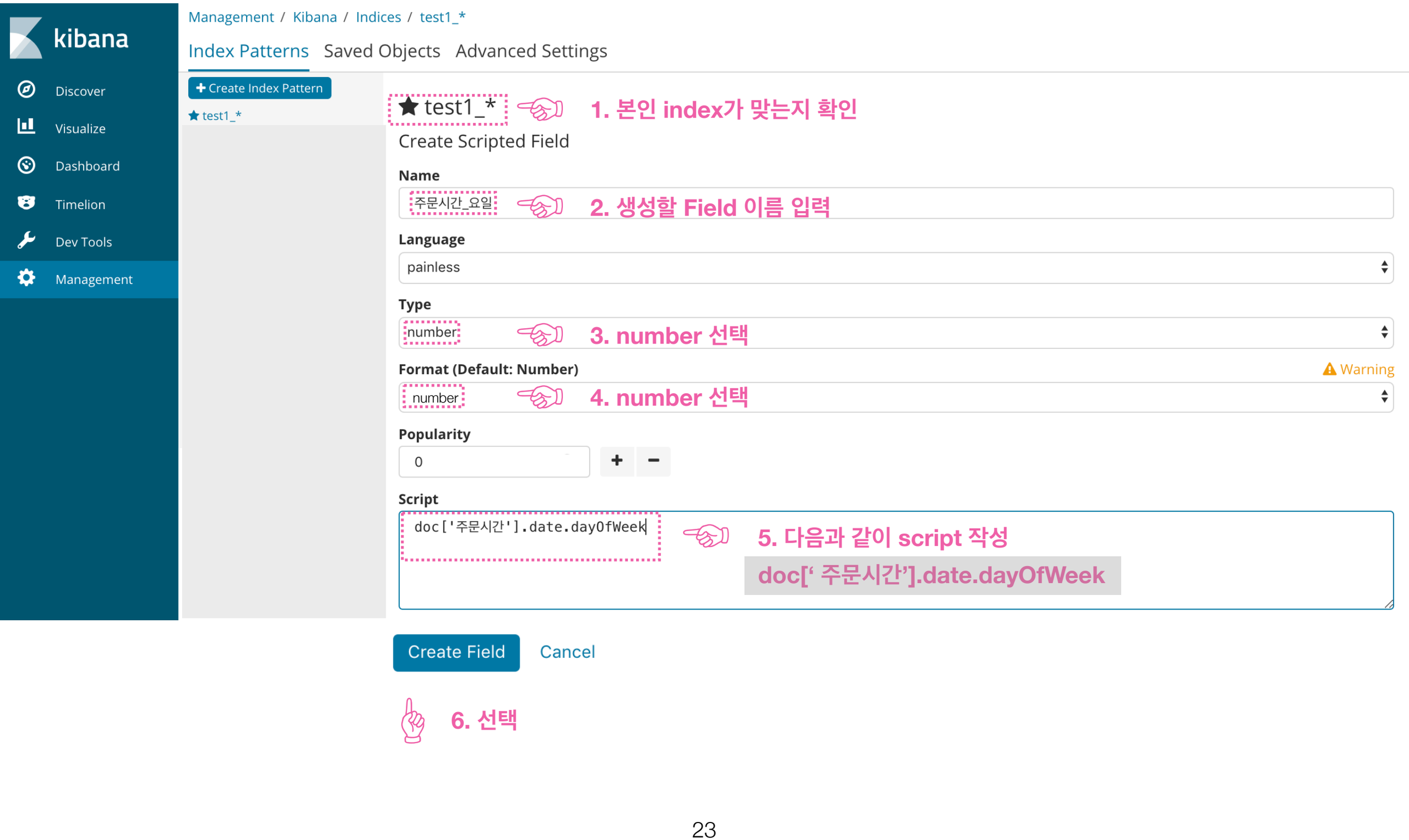
scripted field를 추가하자



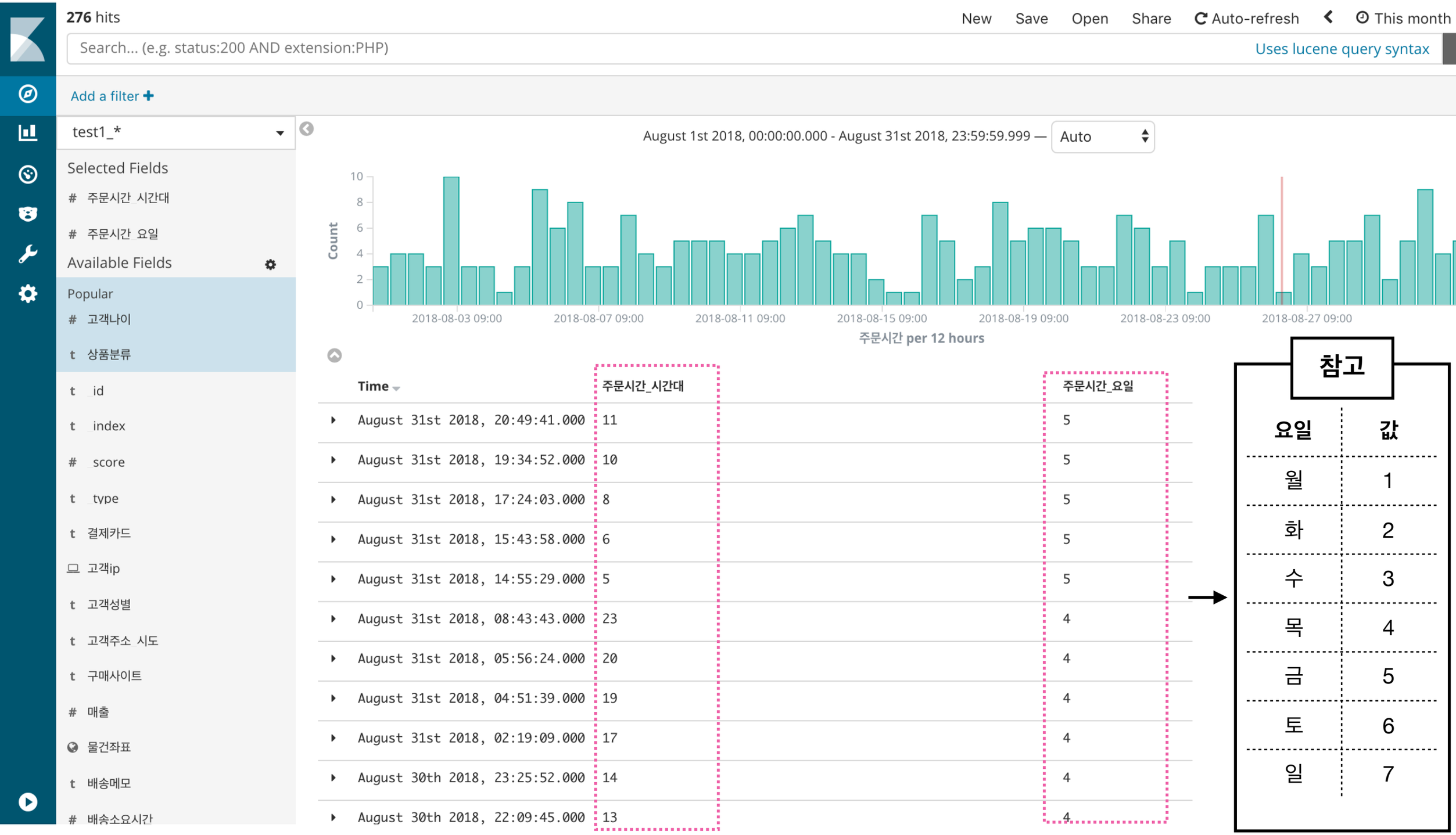
script(시간대)를 작성하자 ♕



script(요일)를 작성하자 👑



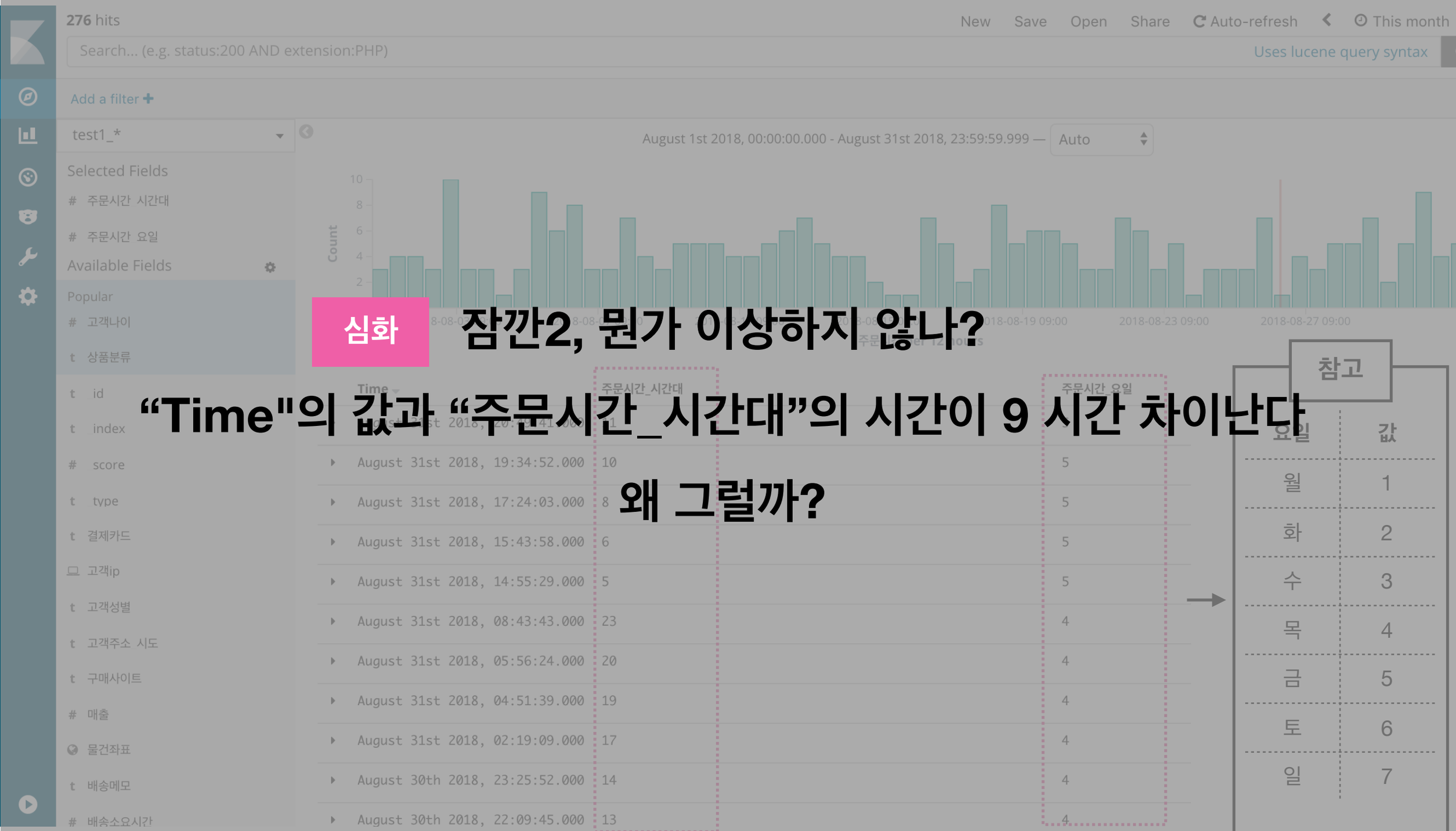
Discover에 가서 확인하자



참고

요일	값
월	1
화	2
수	3
목	4
금	5
토	6
일	7

Discover에 가서 확인하자



심화 **잠깐2, 뭔가 이상하지 않나?**

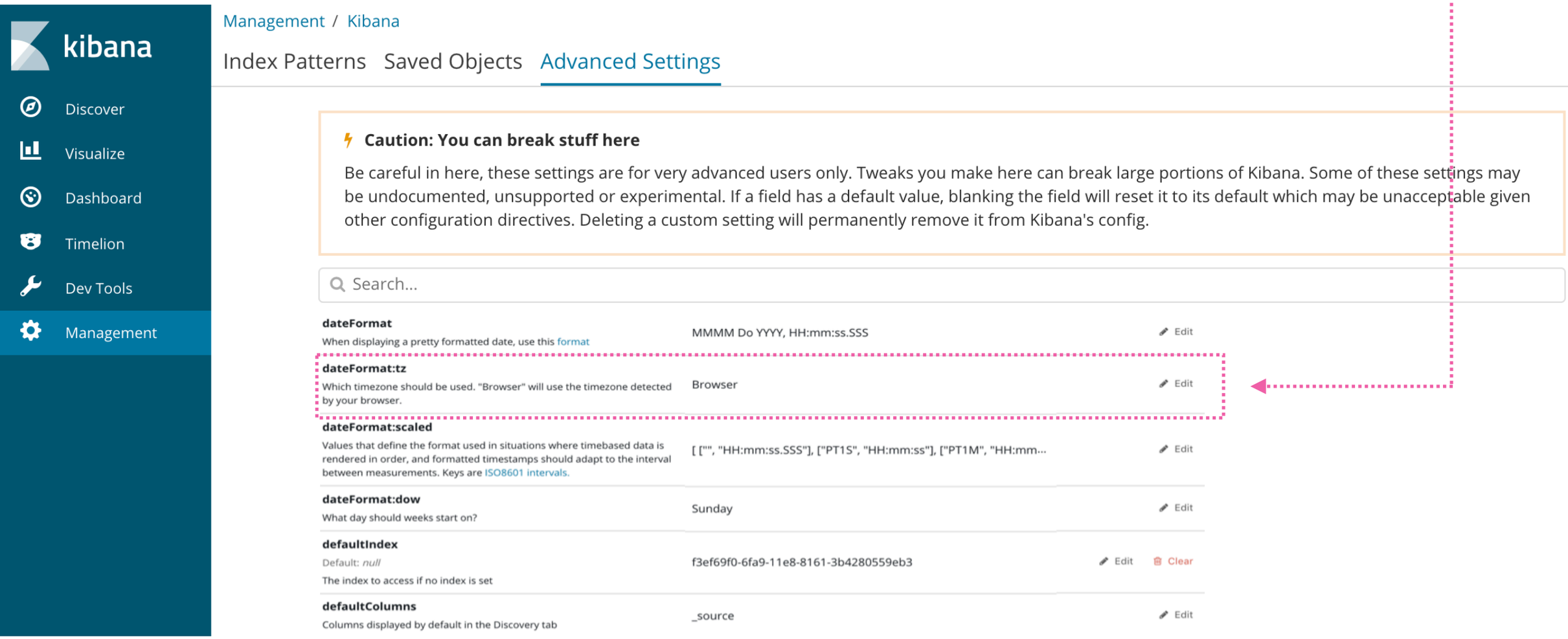
“Time"의 값과 “주문시간_시간대”의 시간이 9 시간 차이난다

왜 그럴까?

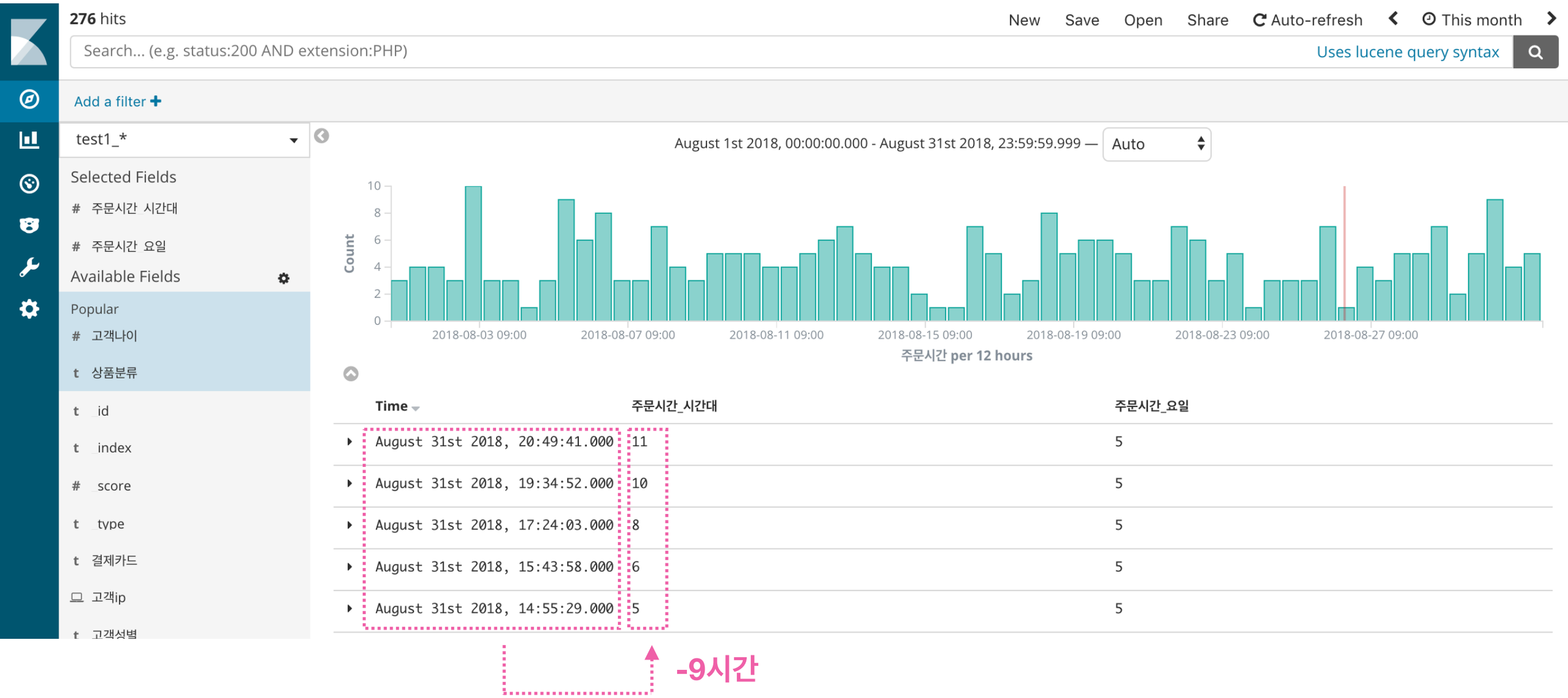
Elasticsearch timezone ≠ Kibana timezone 심화

Elasticsearch : 기본적으로 입력된 date field를 **UTC**로 인식한다

Kibana : Management - Advanced Options - dateFormat:tz에서 timezone 설정 (수업 : **Browser**)



Elasticsearch timezone ≠ Kibana timezone 심화



즉, Scripted Field로 추출한 (elasticsearch의) 주문시간 field의

시간대 및 요일은 ~~Local 시간~~이 아닌 **UTC** 시간이기에

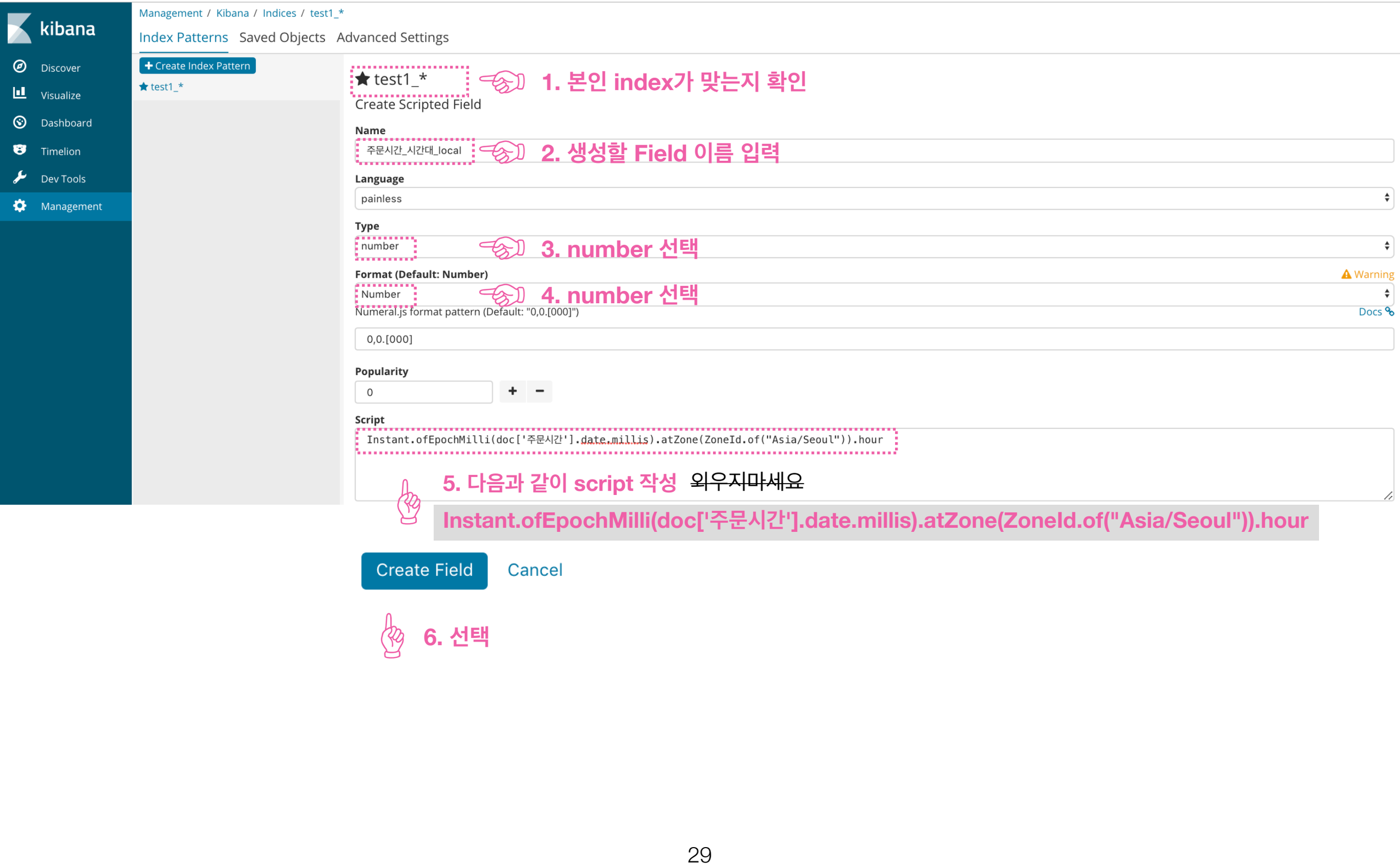
그대로 사용하면 잘못 해석할 여지가 있다

번거롭지만 UTC 시간대로 직접 작업할 것이 아니면

Local 시간대로 변환하는 단계를 거쳐야 한다

(아까 생성한 Scripted Field를 수정하자)

script(local 시간대)를 작성하자 👑 심화



script(local 요일)를 작성하자 👑 심화

kibana

- Discover
- Visualize
- Dashboard
- Timelion
- Dev Tools
- Management

Management / Kibana / Indices / test1_*

Index Patterns | Saved Objects | Advanced Settings

+ Create Index Pattern

★ test1_*

★ test1_*

Create Scripted Field

1. 본인 index가 맞는지 확인

Name

주문시간_요일_local

2. 생성할 Field 이름 입력

Language

painless

Type

string

3. string 선택

Format (Default: String)

⚠ Warning

String

4. string 선택

Transform

- none -

Popularity

0 + −

Script

```
Instant.ofEpochMilli(doc['주문시간'].date.millis).atZone(ZoneId.of("Asia/Seoul")).dayOfWeek
```

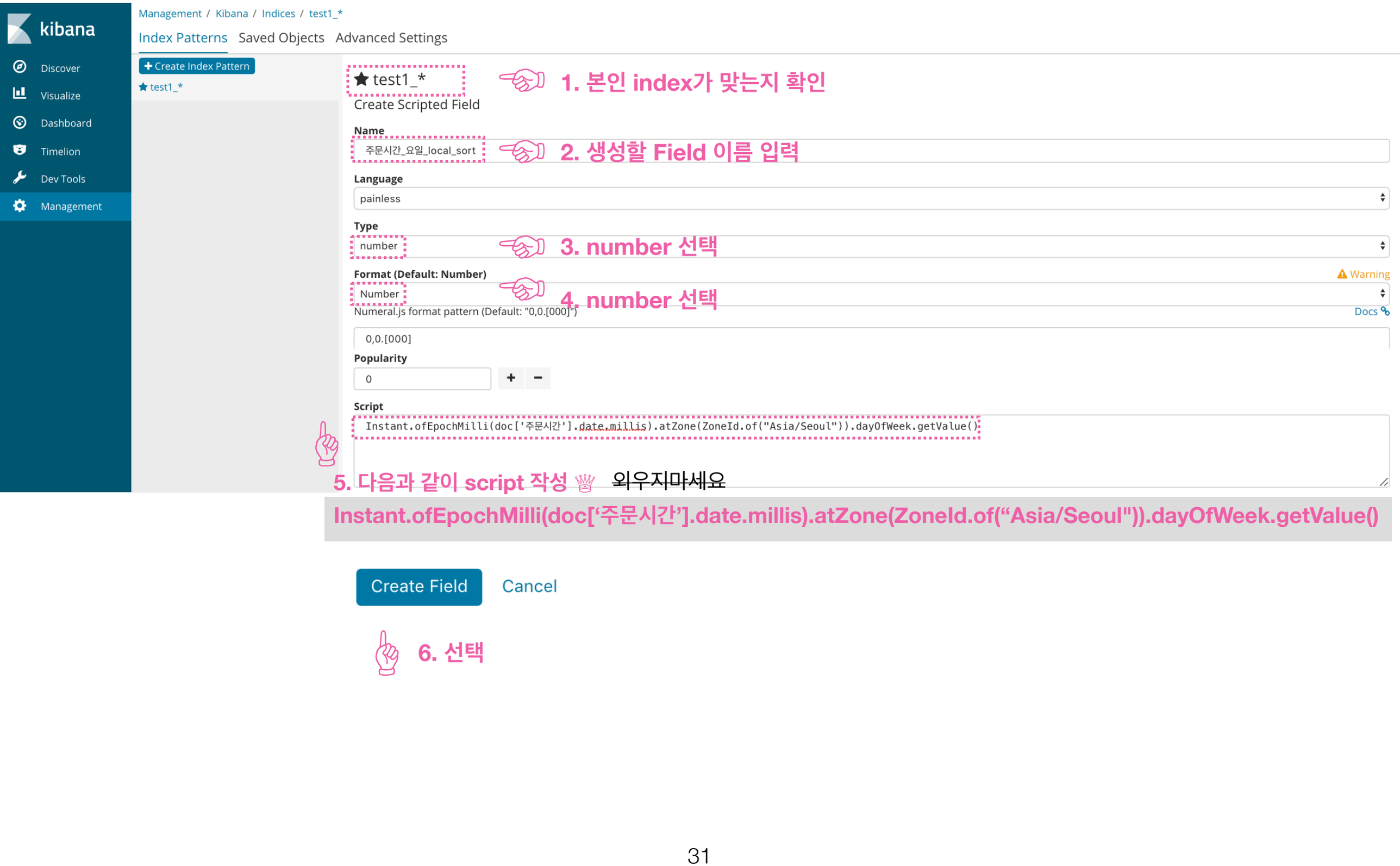
5. 다음과 같이 script 작성 외우지마세요

Instant.ofEpochMilli(doc['주문시간'].date.millis).atZone(ZoneId.of("Asia/Seoul")).dayOfWeek

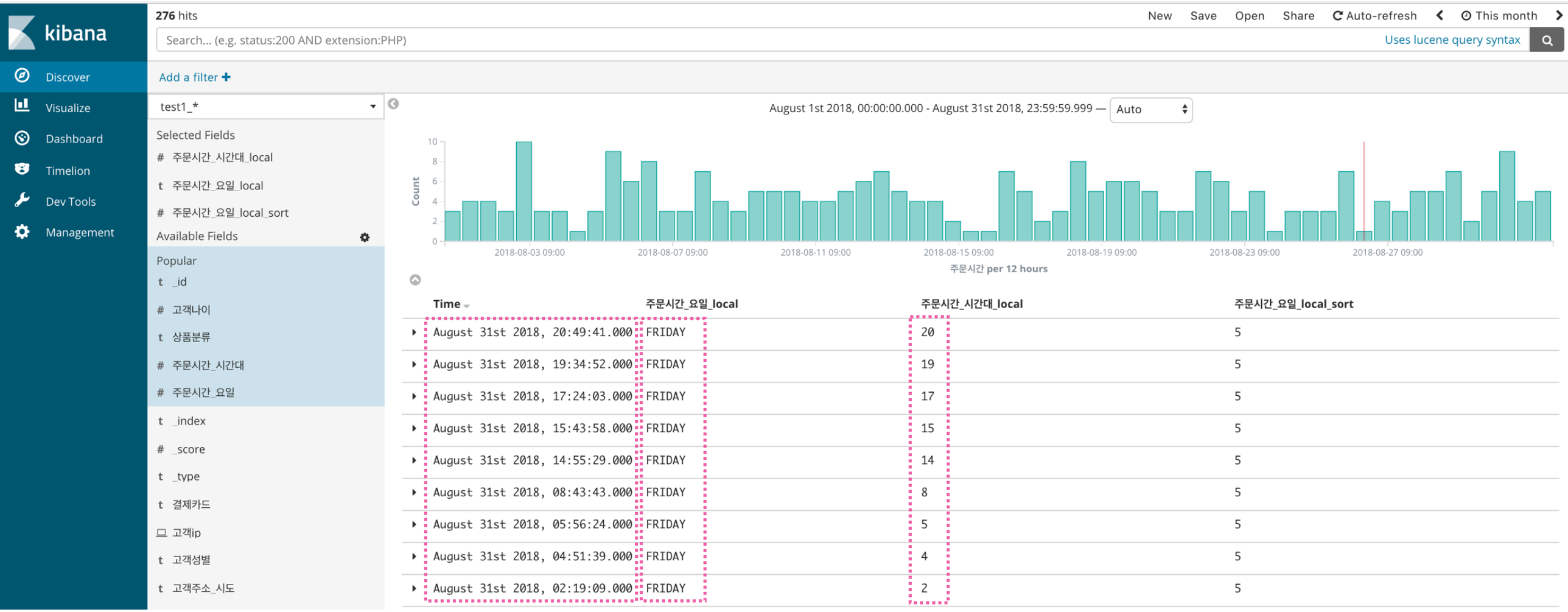
Create Field | Cancel

6. 선택

script(local 요일-숫자)를 작성하자 👑 심화



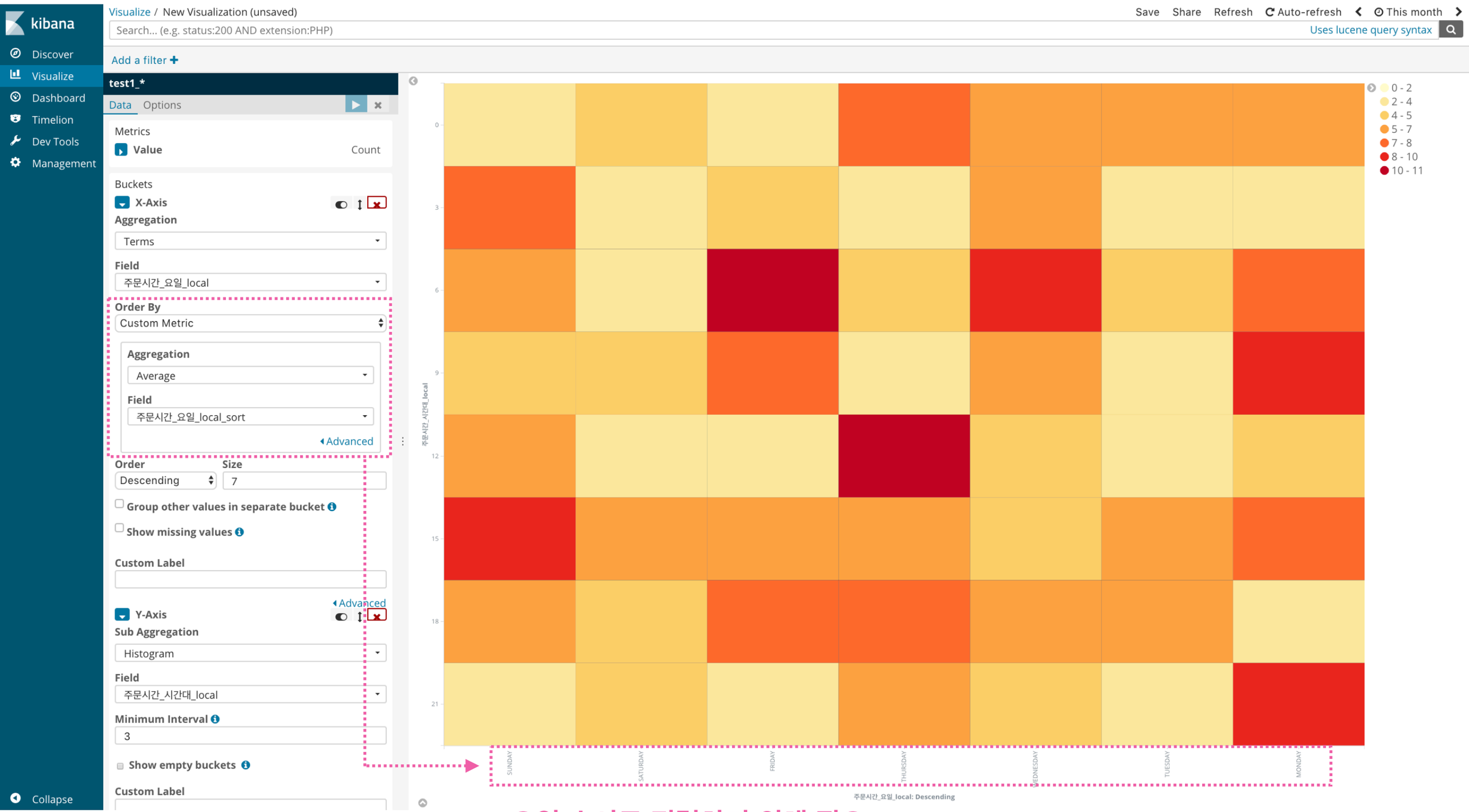
Discover에 가서 확인하자 심화



앞의 결과를 이용하면 Local TIme 기준을

활용해서 Visualization을 생성할 수 있다.

(Week1-2에서 사용했던 Heat Map은 UTC 기준)



요일 순서로 정렬하기 위해 필요

String Concatenation 연산은 안되나?

Field 간 연산은 안되나?

Date Field에서 연/월/일/시/분/초 등 접근 안되나?

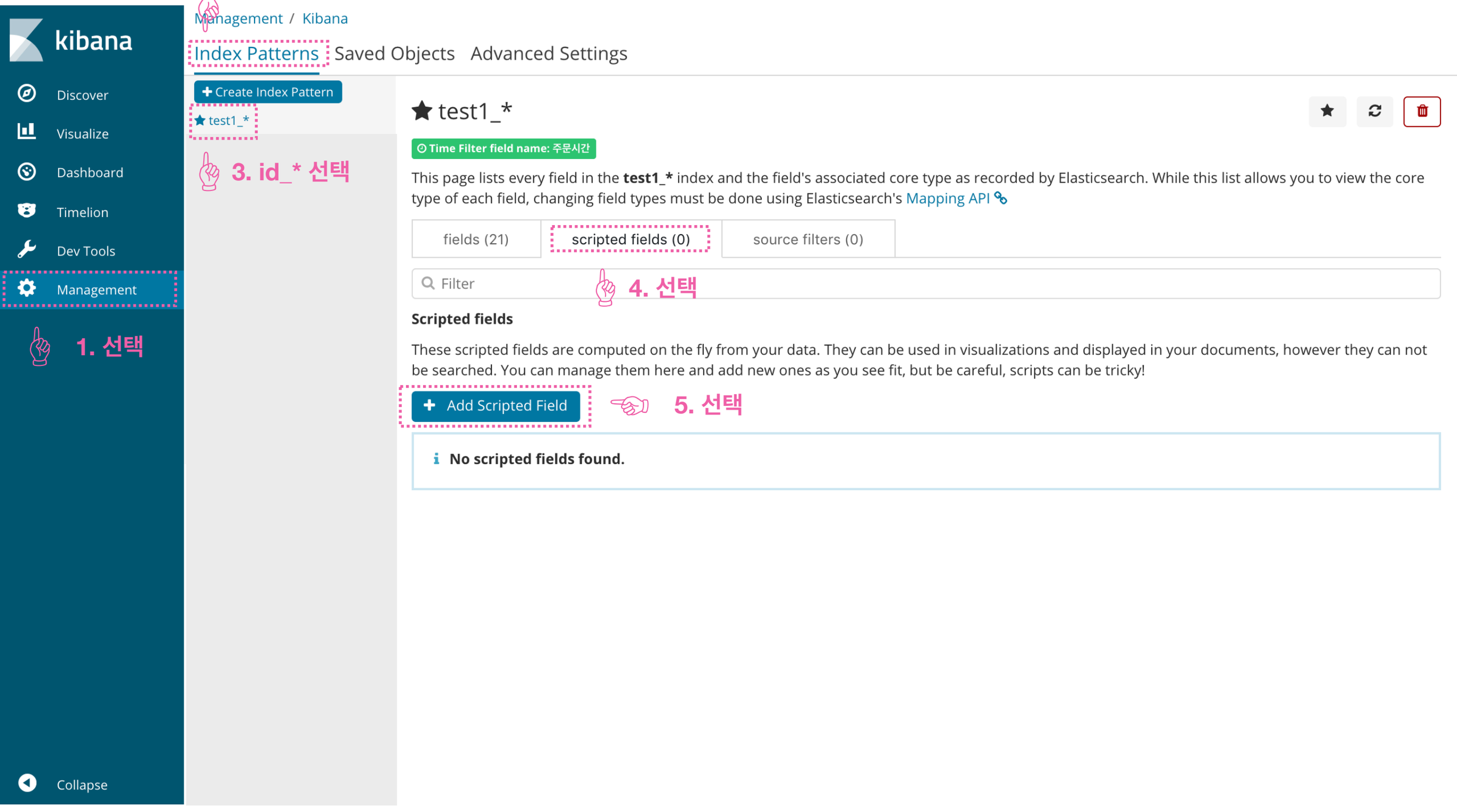
기존 Field에 조건을 적용해서 새로운 Field를 만들 수 없나? 

예시

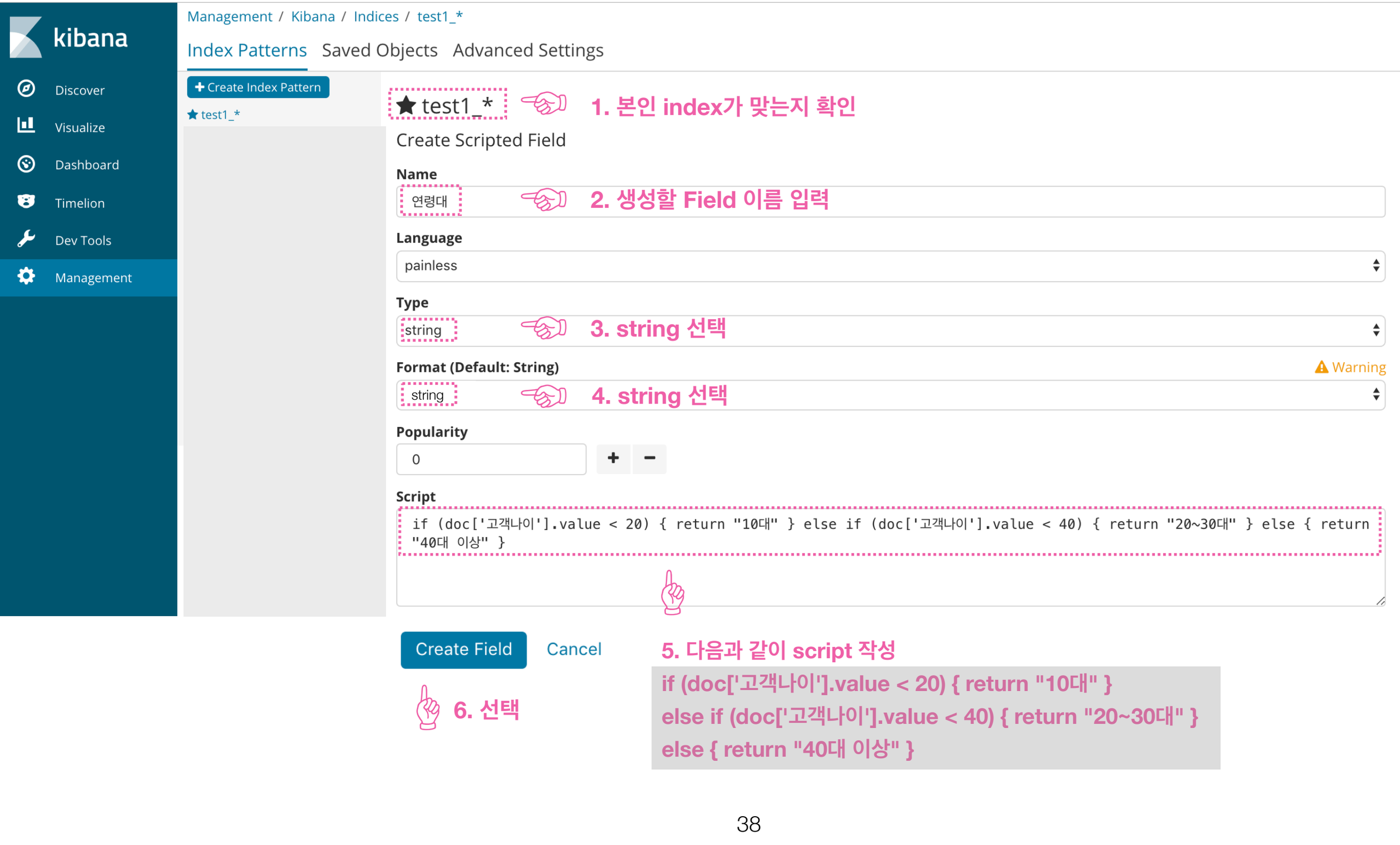
고객나이 Field 값에 따라 10대, 20대, 30대, …

와 같은 값을 갖는 Field를 만들고 싶다면?

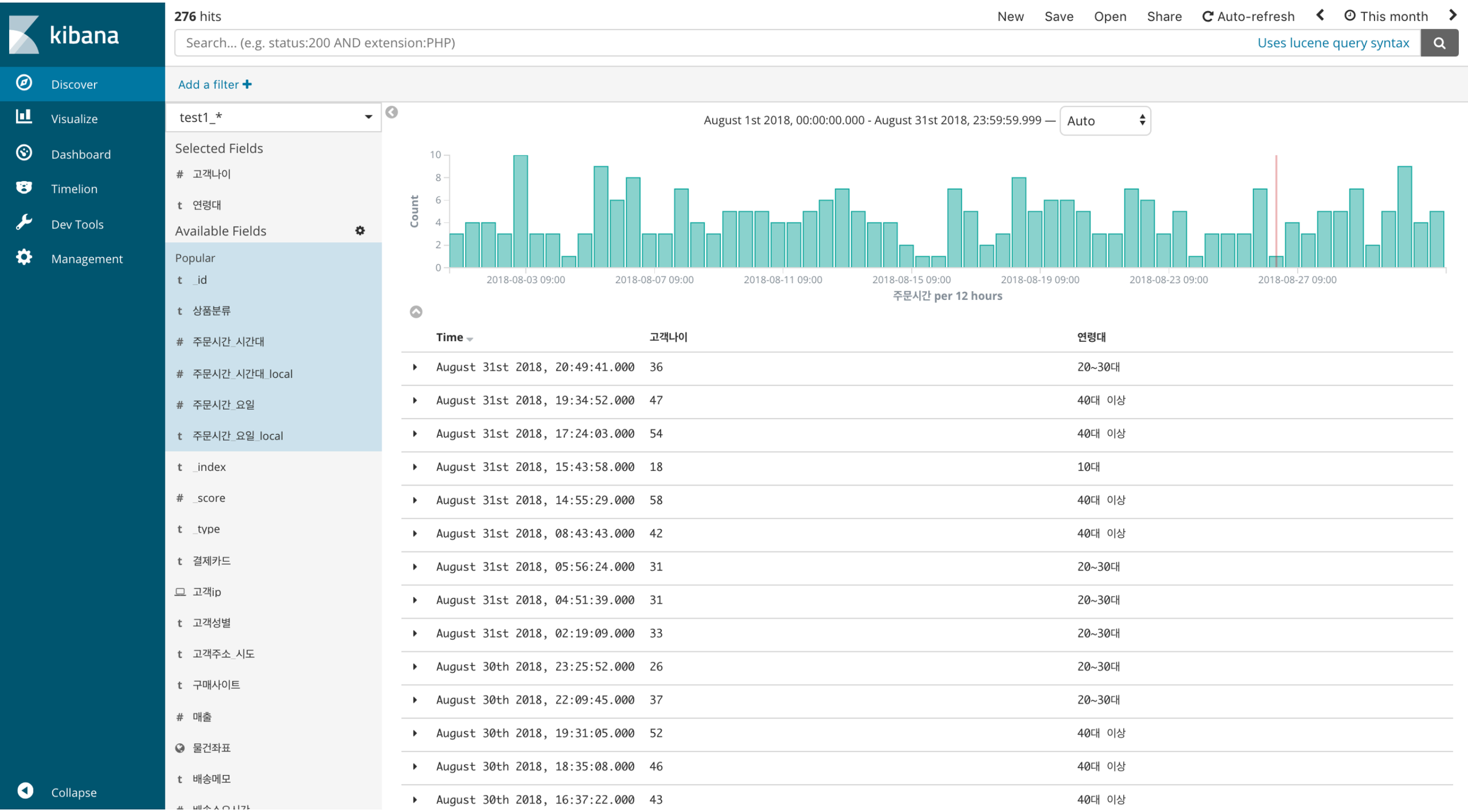
scripted field를 추가하자



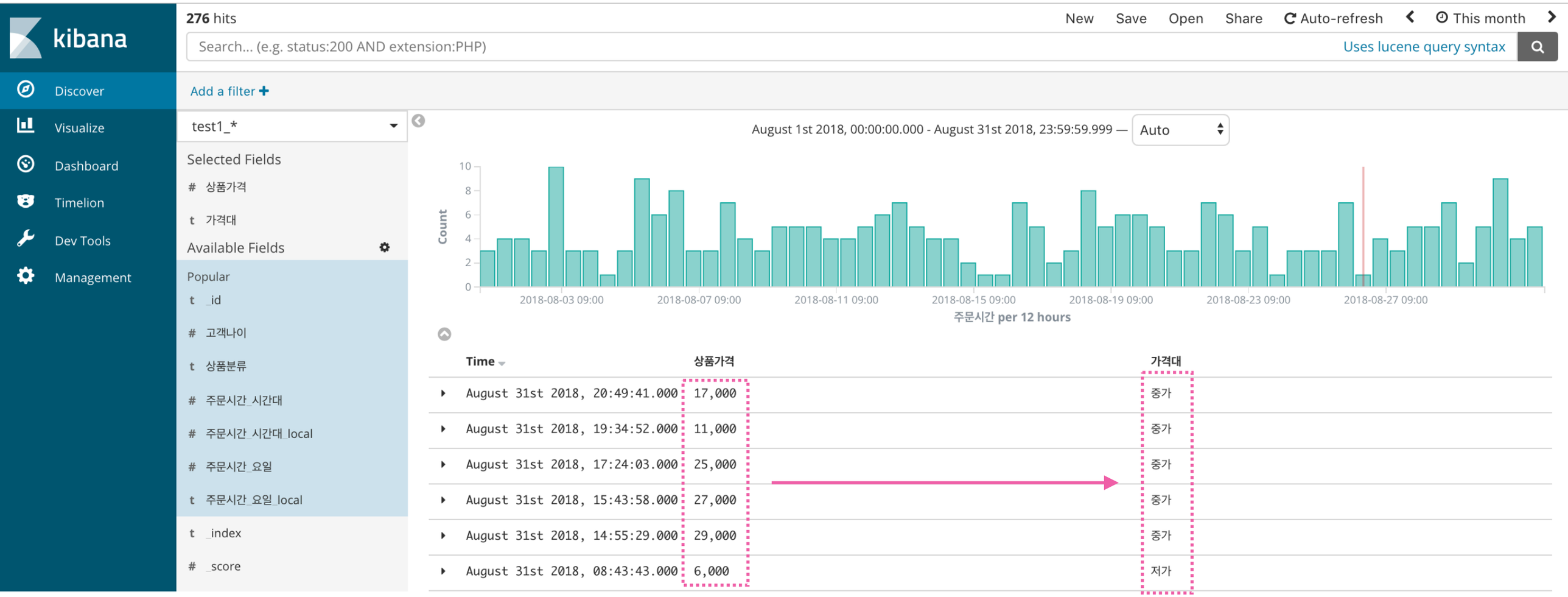
script를 작성하자 👑



Discover에 가서 확인하자



예제2 - Scripted Field



상품가격	가격대
x ≤ 10,000	저가
10,000 < x ≤ 20,000	중가
20,000 < x	고가

단, Scripted Field를 사용할 때 다음과 같은 사항에 주의하자! 👑

1. Kibana 상에서 Lucene Query Syntax로 검색이 안된다

✏ 6.X에서는 kuery를 통해서는 가능

✏ 5.X에서는 Filter를 이용해서 검색해야 한다

2. 한 번에 한 개의 Document만 조회할 수 있다.

✏ 즉, 여러 Documents를 동시에 접근해서 계산하는 시계열 수식은 가능하지 않다

3. Scripted Field를 데이터 색인 시에 application에서 생성하자

✏ Scripted Field는 elasticsearch에 저장되지 않고 쿼리 시점에 Elasticsearch에 전달된다 (연산 작업 필요)

✏ 그러므로 Kibana에서 사용자 응답시간 단축을 위해 데이터 색인 시에 scripted field를 생성하자

Managing Field ♕

Elasticsearch에 저장된 데이터를

Kibana에서 **format만 살짝 변경**해서 보여줄 수 없을까?

Date를 다르게 표현할 수 없나? 👑

20180701

1511199899

Sunday Jul 1st 18

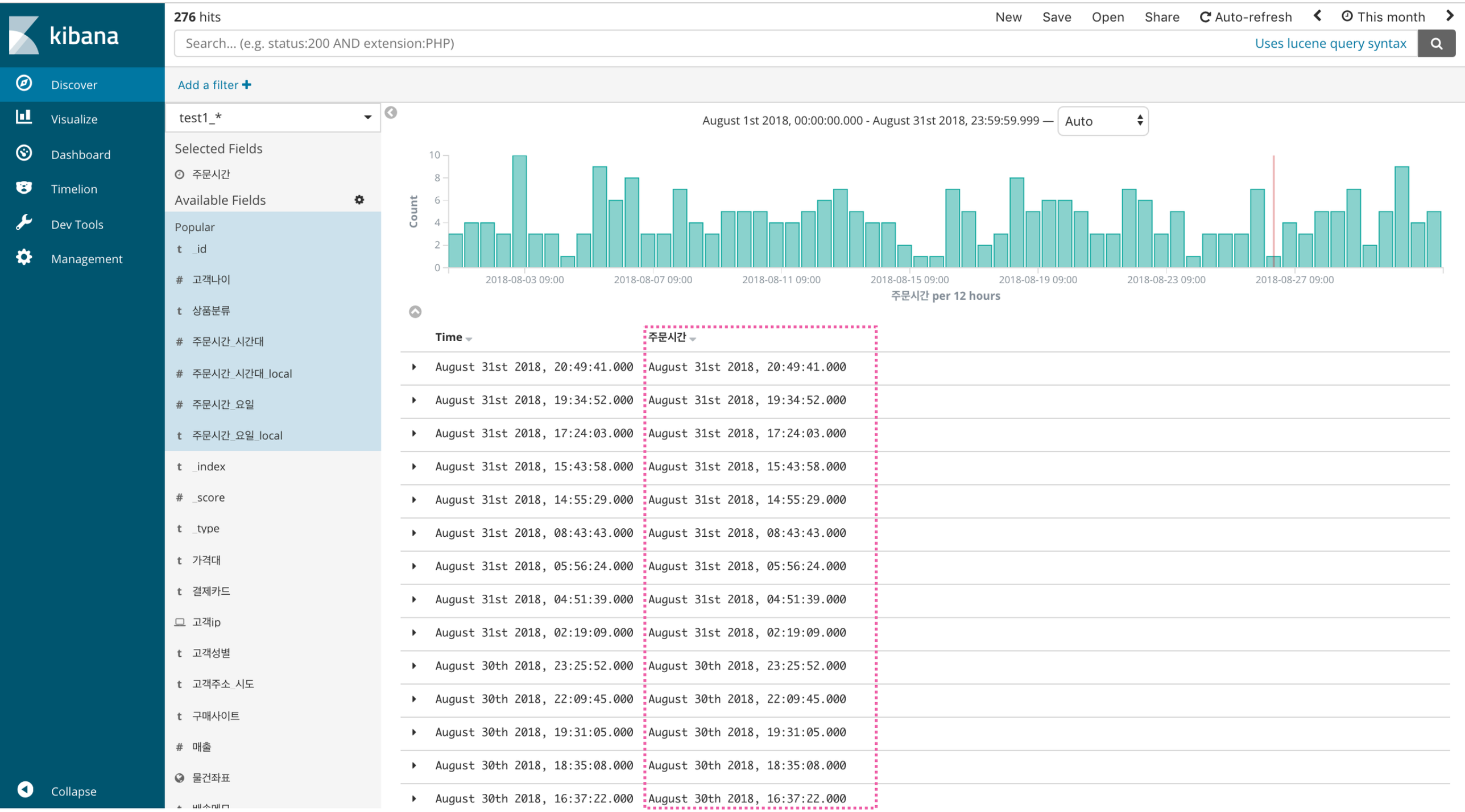
2017년 11월 20일 17시 44분

11/20/2017 5:44pm

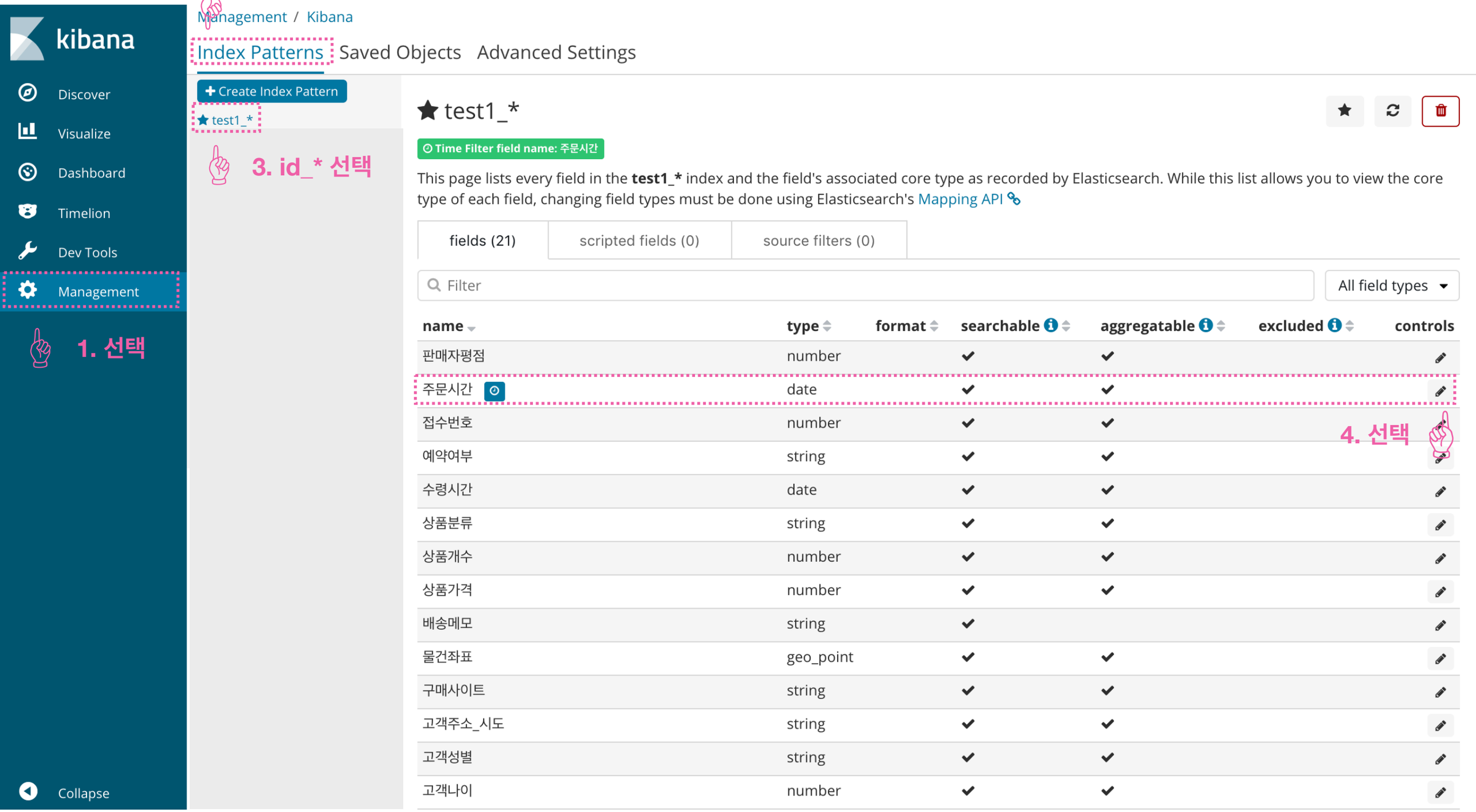
2018년07월01일

July 1st 2018, 9:05:21 pm

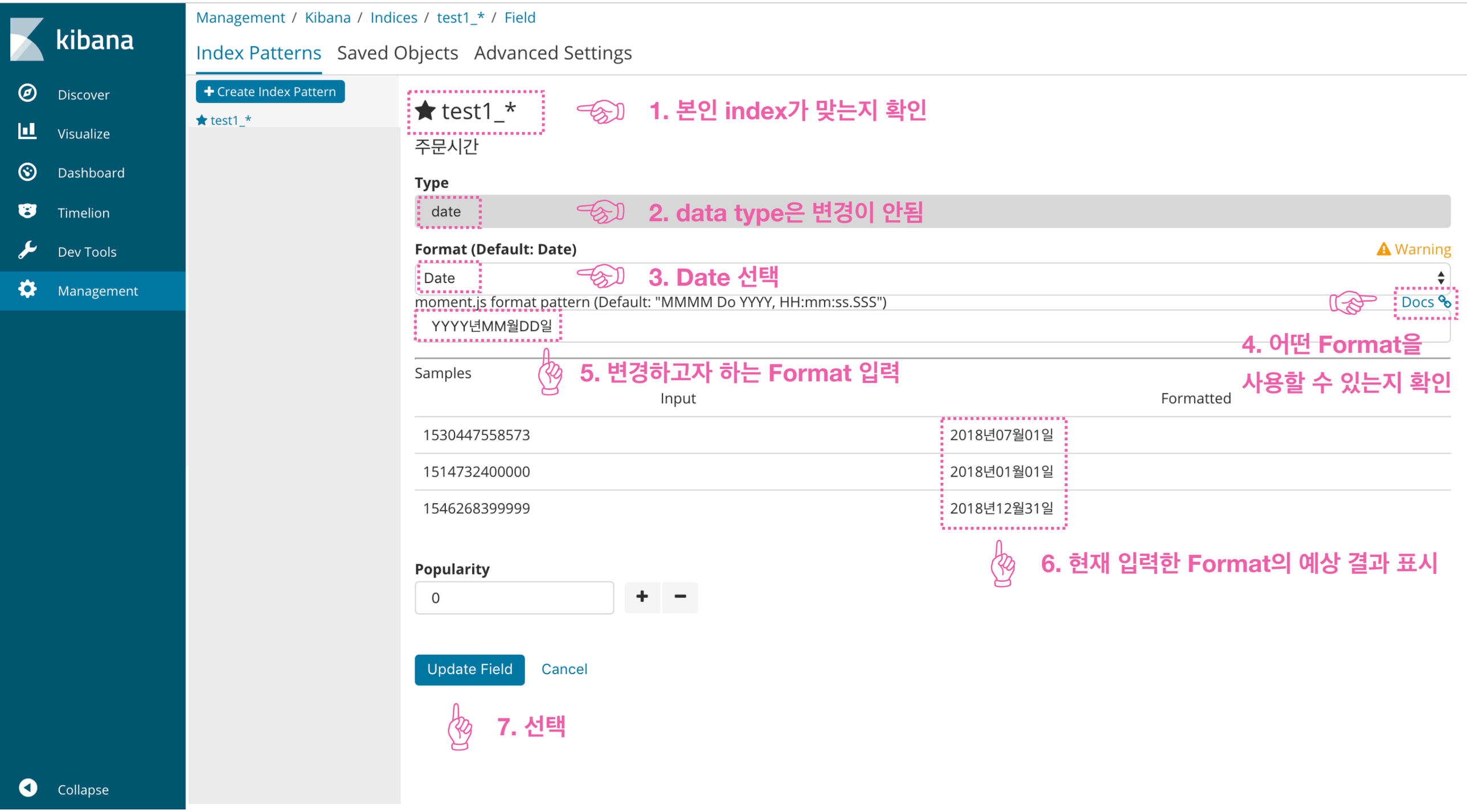
Default는 아래와 같은 Format이다



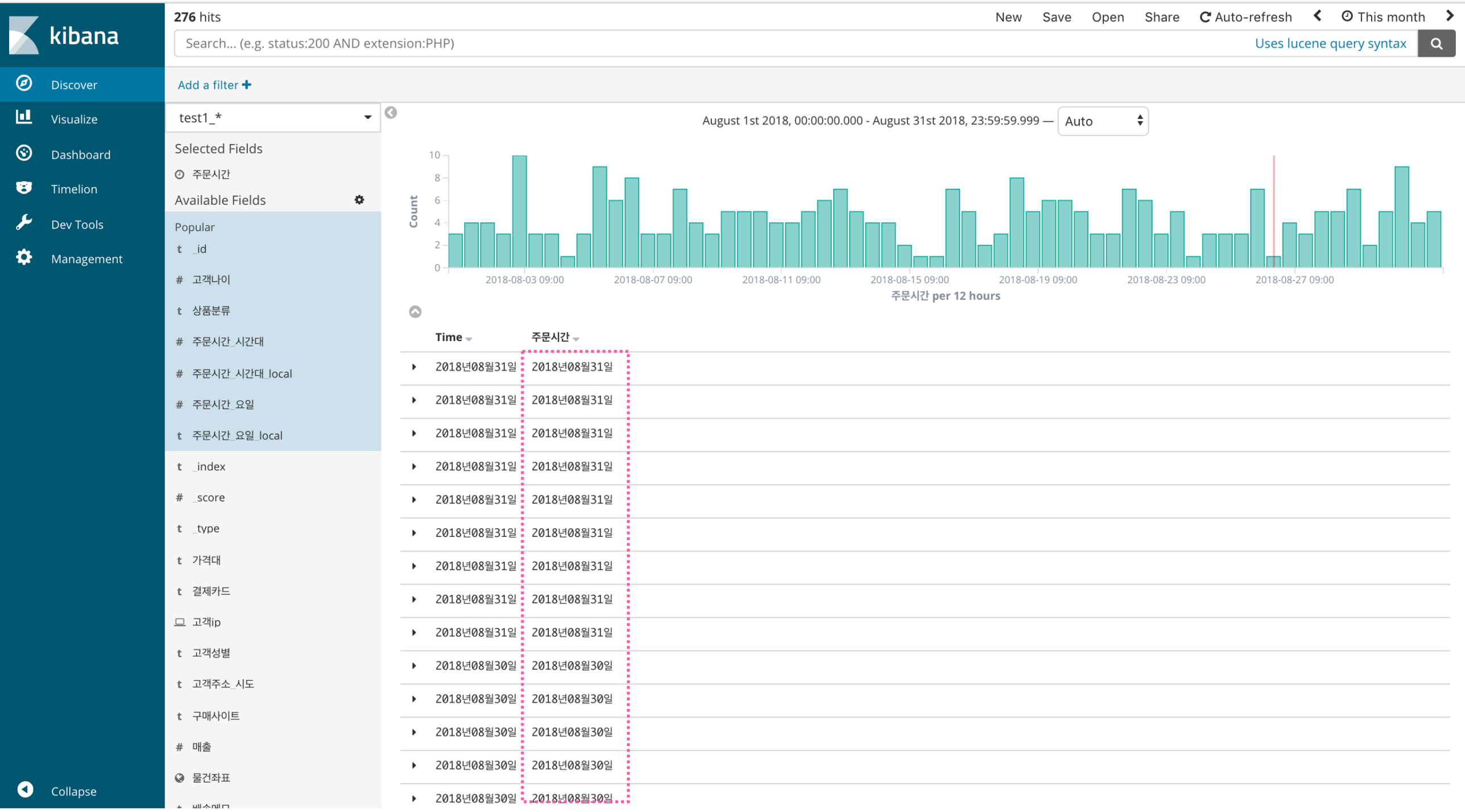
Date Format 변경하려는 Field의 Controls 선택



적절한 Format으로 수정하자



Discover에 돌아가서 확인하자



아래 표를 이용해서 여러가지 Format을 테스트해보자 (권장)

날짜 단위	문법	예시	설명
Year	YYYY	2014	4자리 표시
Year	YY	14	2자리 표시
Month	M	1	1~2자리 표시
Month	MM	01	2자리 표시
Day	D	1	1~2자리 표시
Day	DD	01	2자리 표시
Day	Do	1st	며칠째인지 표시
Hour	H	1	1자리 표시 (24시)
Hour	HH	01	1~2자리 표시 (24시)
Hour	h	1	1자리 표시 (12시)
Hour	hh	01	1~2자리 표시 (12시)
a	h	am/pm	소문자 표시
A	hh	AM/PM	대문자 표시
Minute	m	1	1자리 표시
Minute	mm	01	1~2자리 표시
Second	s	1	1자리 표시
Second	ss	01	1~2자리 표시
Second	X	1410715640.579	Unix Timestamp 초
Millisecond	x	1410715640579	Unix Timestam 밀리초

String를 다르게 표현할 수 없나? 👑

higee.io/221111469658

221111469658

higee.io/221111469658 (링크 형식)

221111469658 (링크 형식)

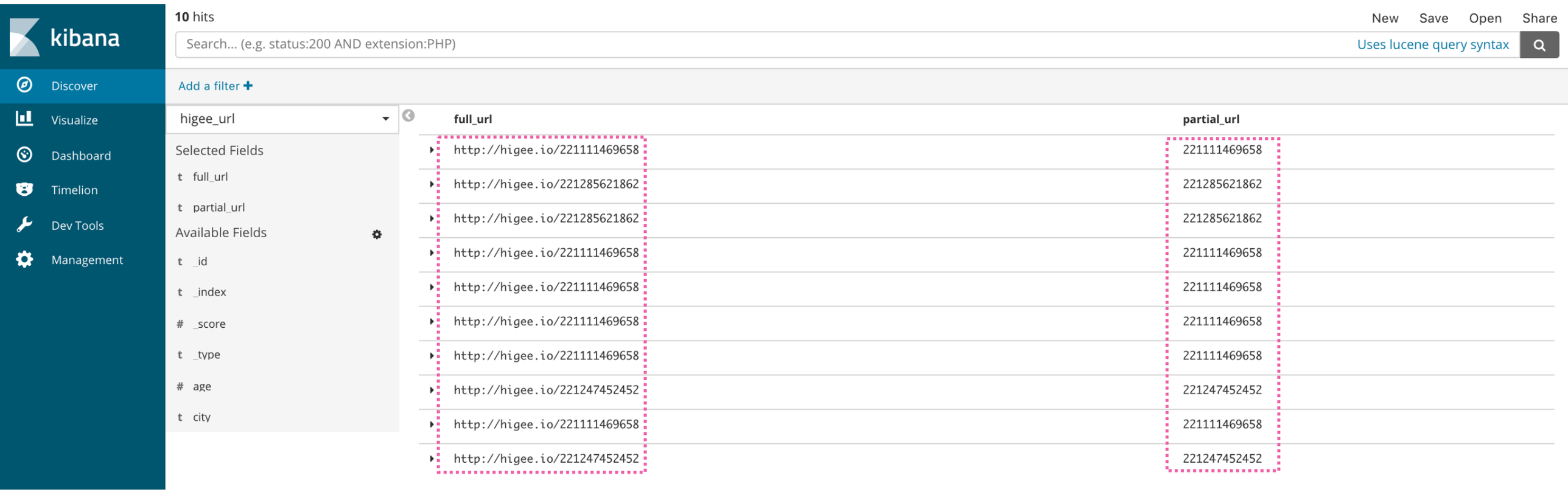
HIGEE/IO/221111469658 (대문자)

String Type의 Format 전환 실습을 위해 Index를 등록하자

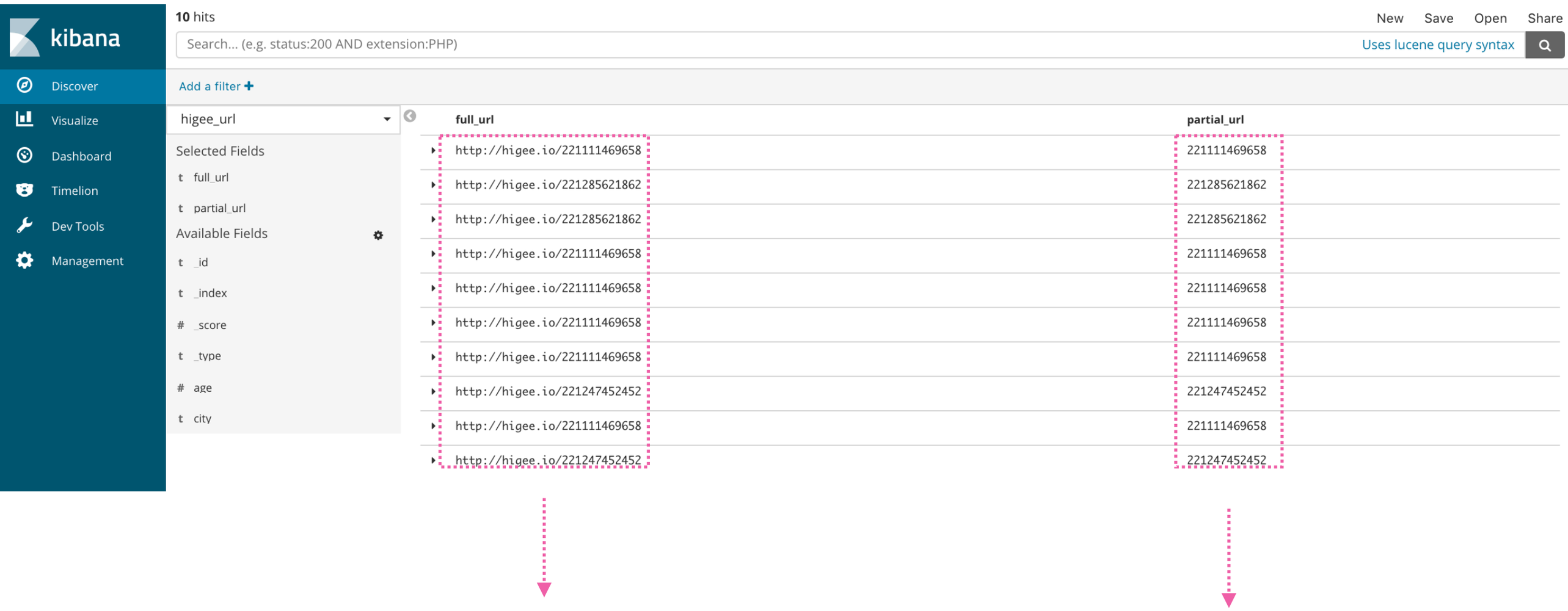
Index : {id}_url

Time Filter Field : 없음

Default는 아래와 같은 Format이다

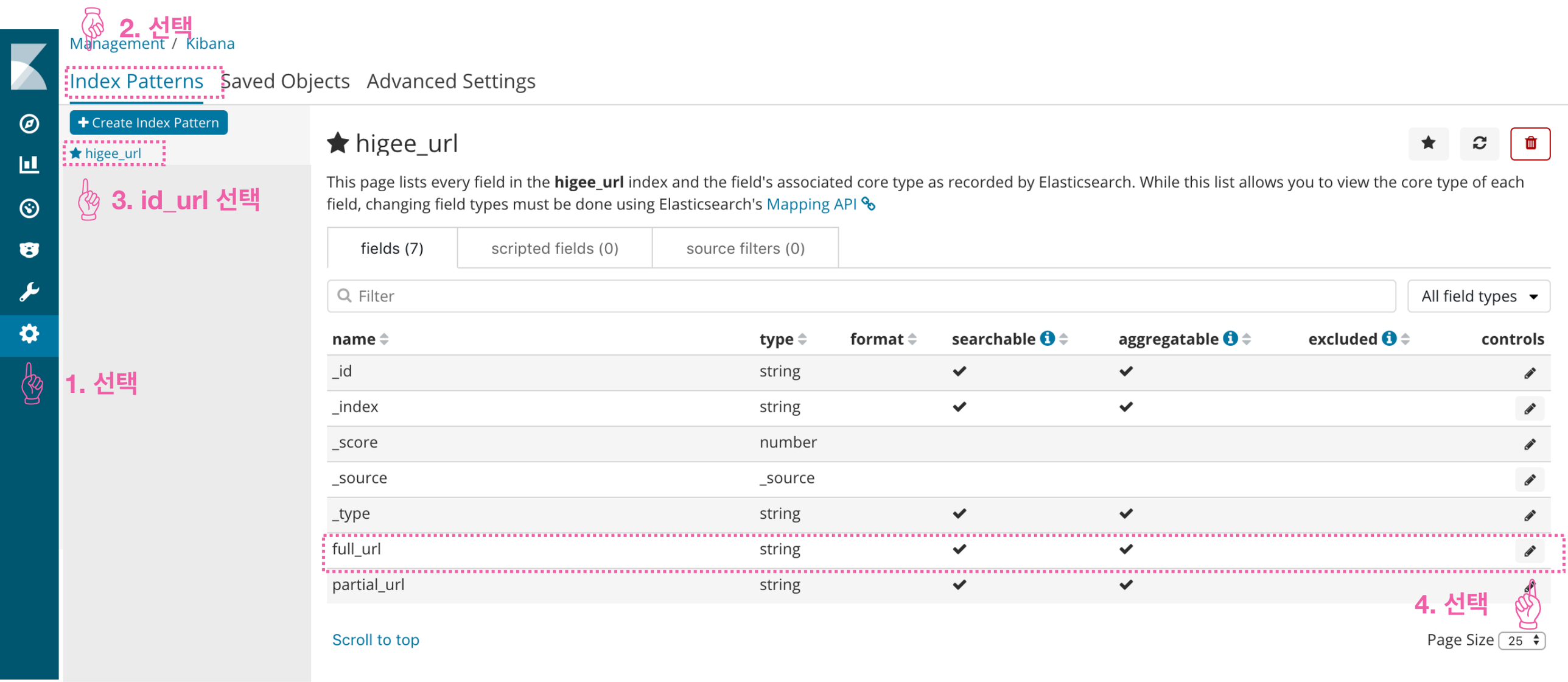


Default는 아래와 같은 Format이다

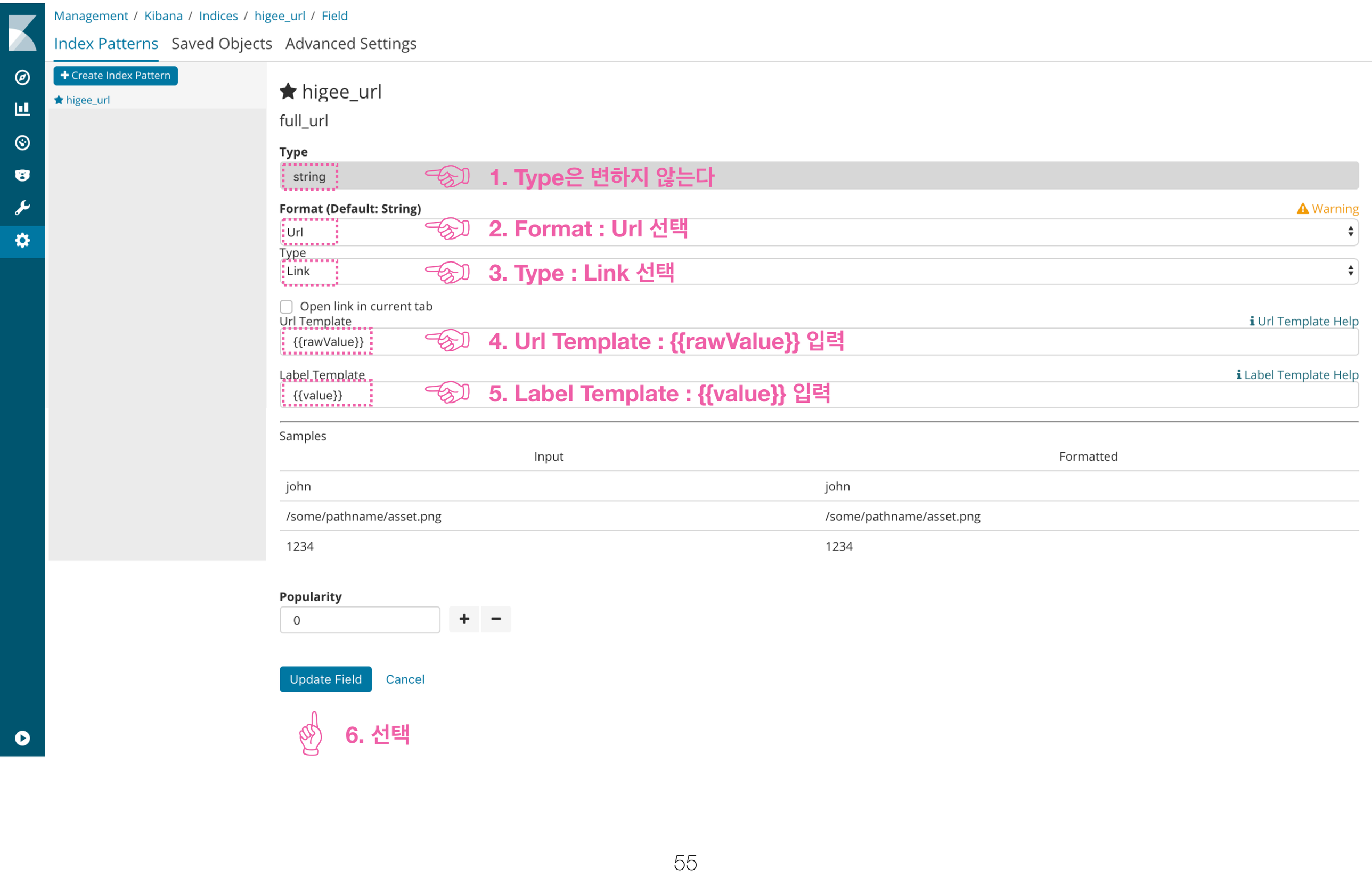


URL 형태를 띄는 두 Field의 Format을 String 에서 **URL**로 변경해보자

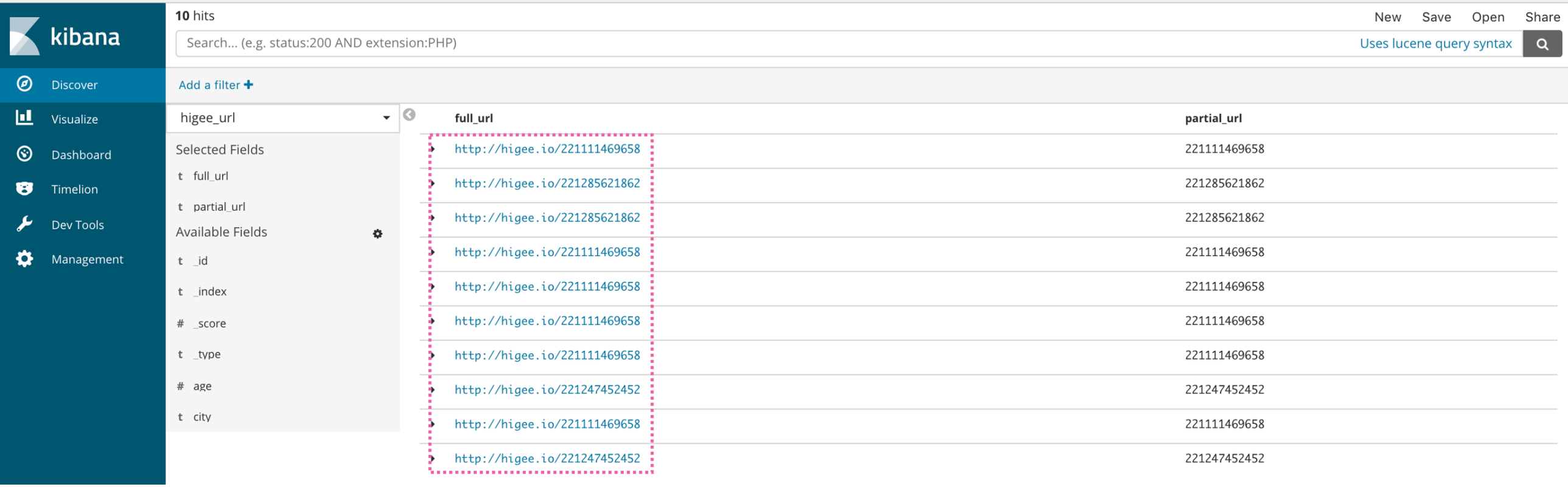
Data Format 변경하려는 Field의 Control 선택 - full_url



Url Templates에 적절한 값을 입력하자



Discover에 돌아가서 확인하자



클릭 가능하게 바뀐게 보이며 클릭하면 제대로 링크로 이동한다

Data Format 변경하려는 Field의 Control 선택 - partial_url

2. 선택

Management / Kibana

Index Patterns | Saved Objects | Advanced Settings

+ Create Index Pattern

★ higee_url

3. id_url 선택

1. 선택

★ higee_url

This page lists every field in the **higee_url** index and the field's associated core type as recorded by Elasticsearch. While this list allows you to view the core type of each field, changing field types must be done using Elasticsearch's Mapping API

fields (7) | scripted fields (0) | source filters (0)

Filter | All field types

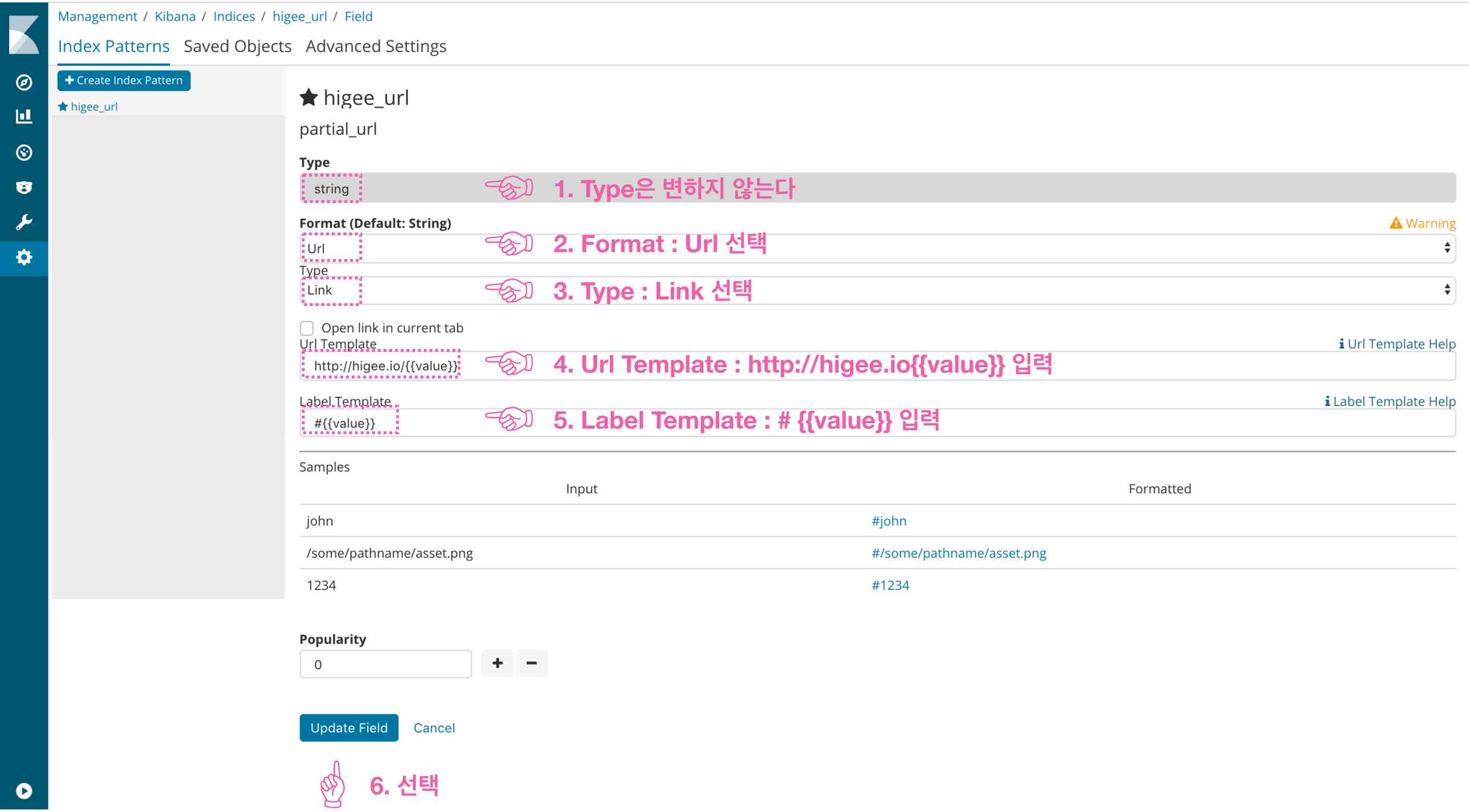
name	type	format	searchable	aggregatable	excluded	controls
_id	string		✔	✔		
_index	string		✔	✔		
_score	number					
_source	_source					
_type	string		✔	✔		
full_url	string	Url	✔	✔		
partial_url	string		✔	✔		

Scroll to top

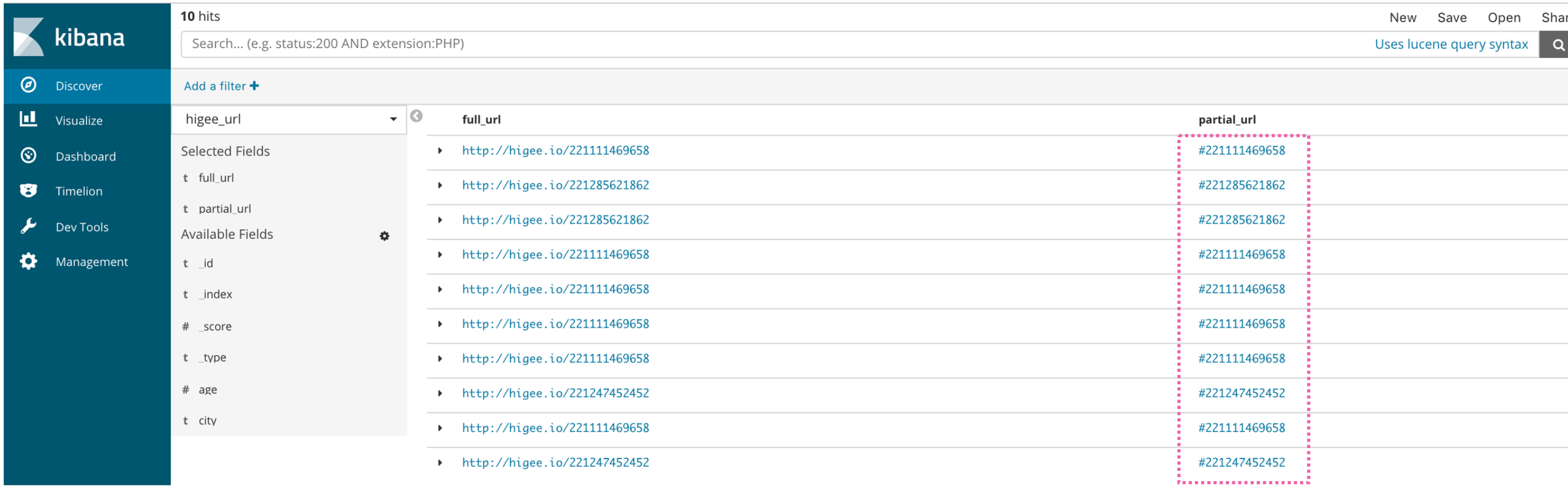
Page Size 25

4. 선택

Url Templates에 적절한 값을 입력하자



Discover에 돌아가서 확인하자

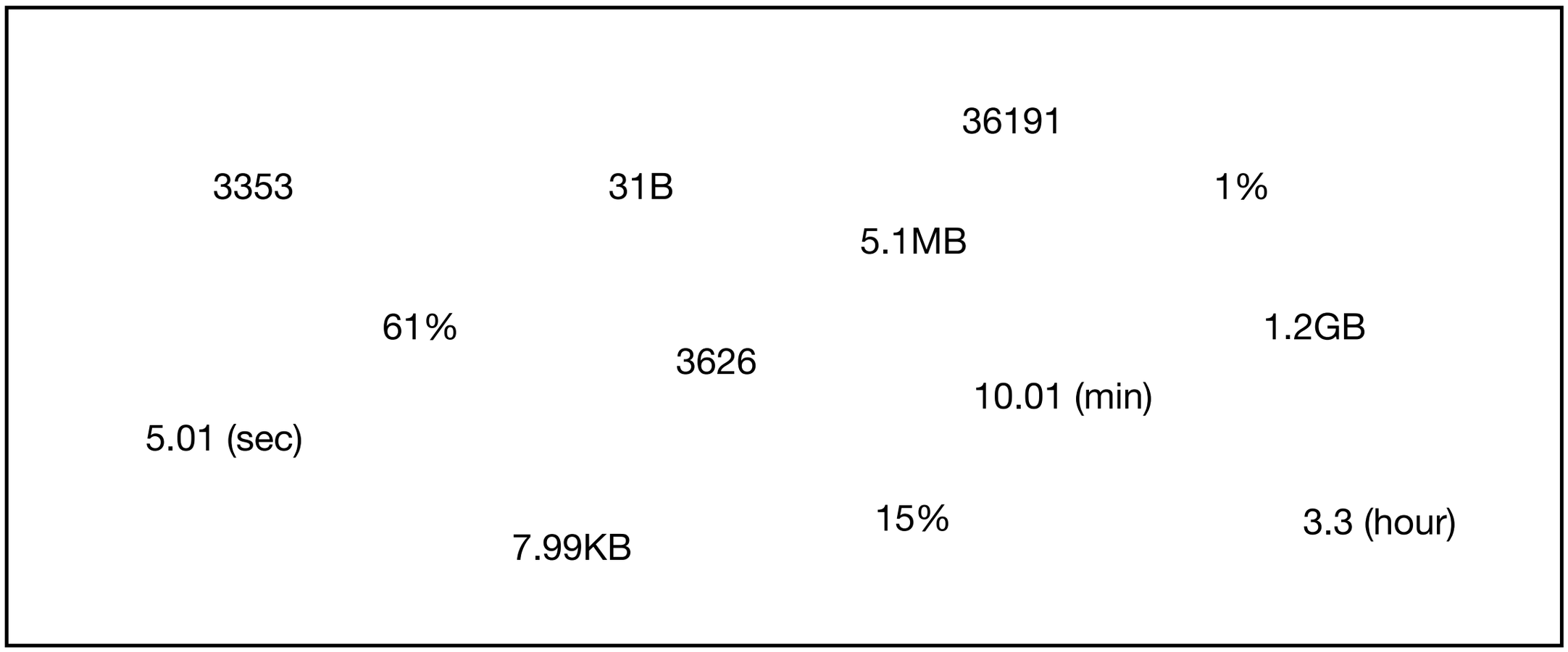


클릭 가능하게 바뀐게 보이며 클릭하면 제대로 링크로 이동한다

url 변환 작업은 어떤 경우에 유용하게 사용할 수 있을까?

블로그 포스트 별 metric을 시각화하고 원문을 쉽게 확인할 수 있다

Number를 다르게 표현할 수 없나? 👑



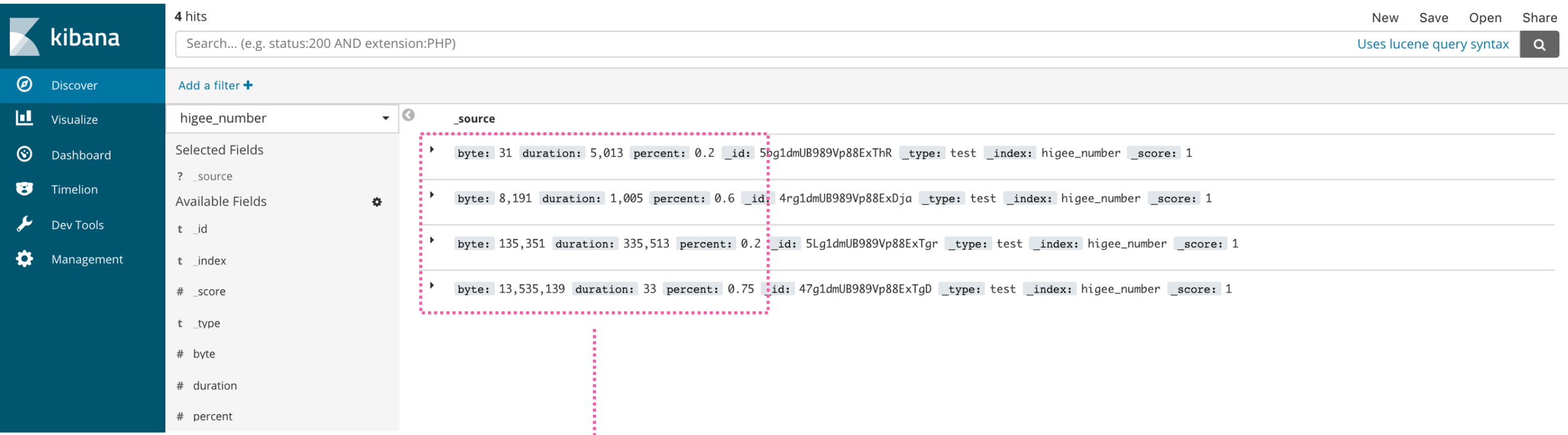
Number Type의 Format 전환 실습을 위해 Index를 등록하자

Index : {id}_number

Time Filter Field : 없음

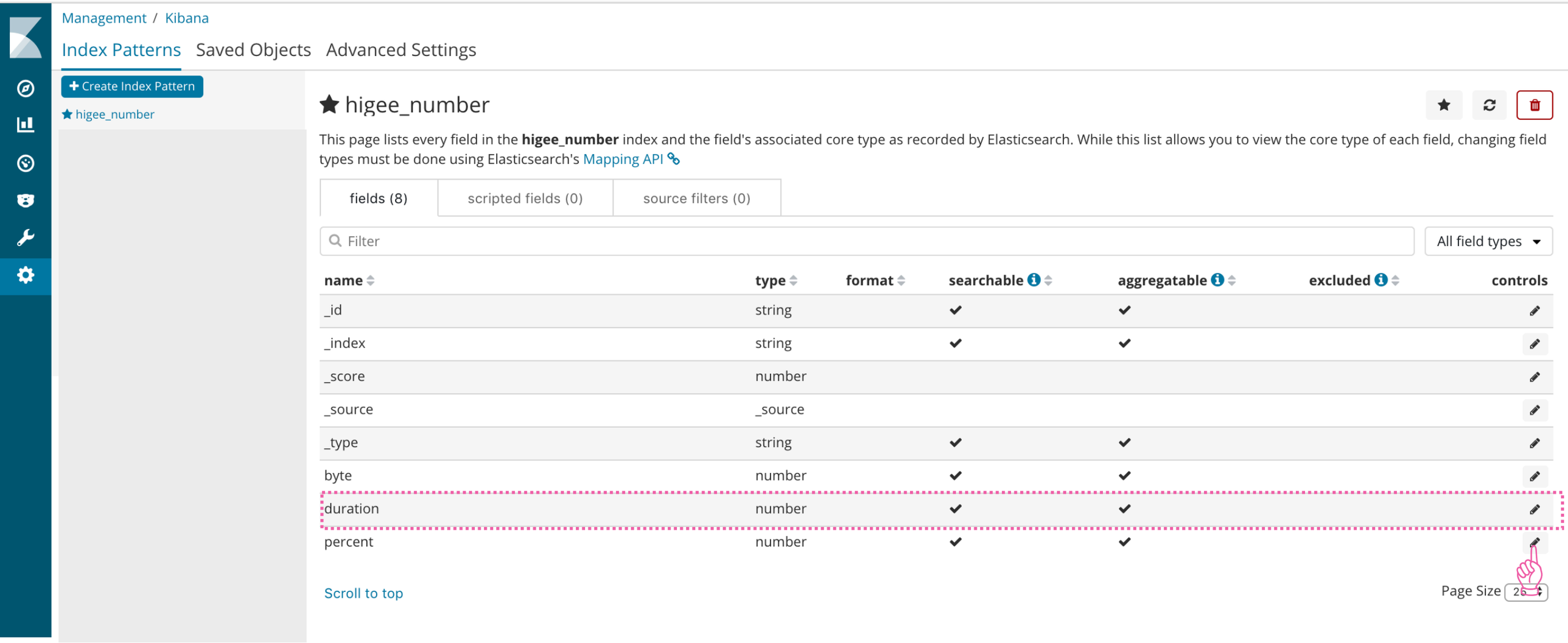
Default는 아래와 같은 Format이다

Default는 아래와 같은 Format이다

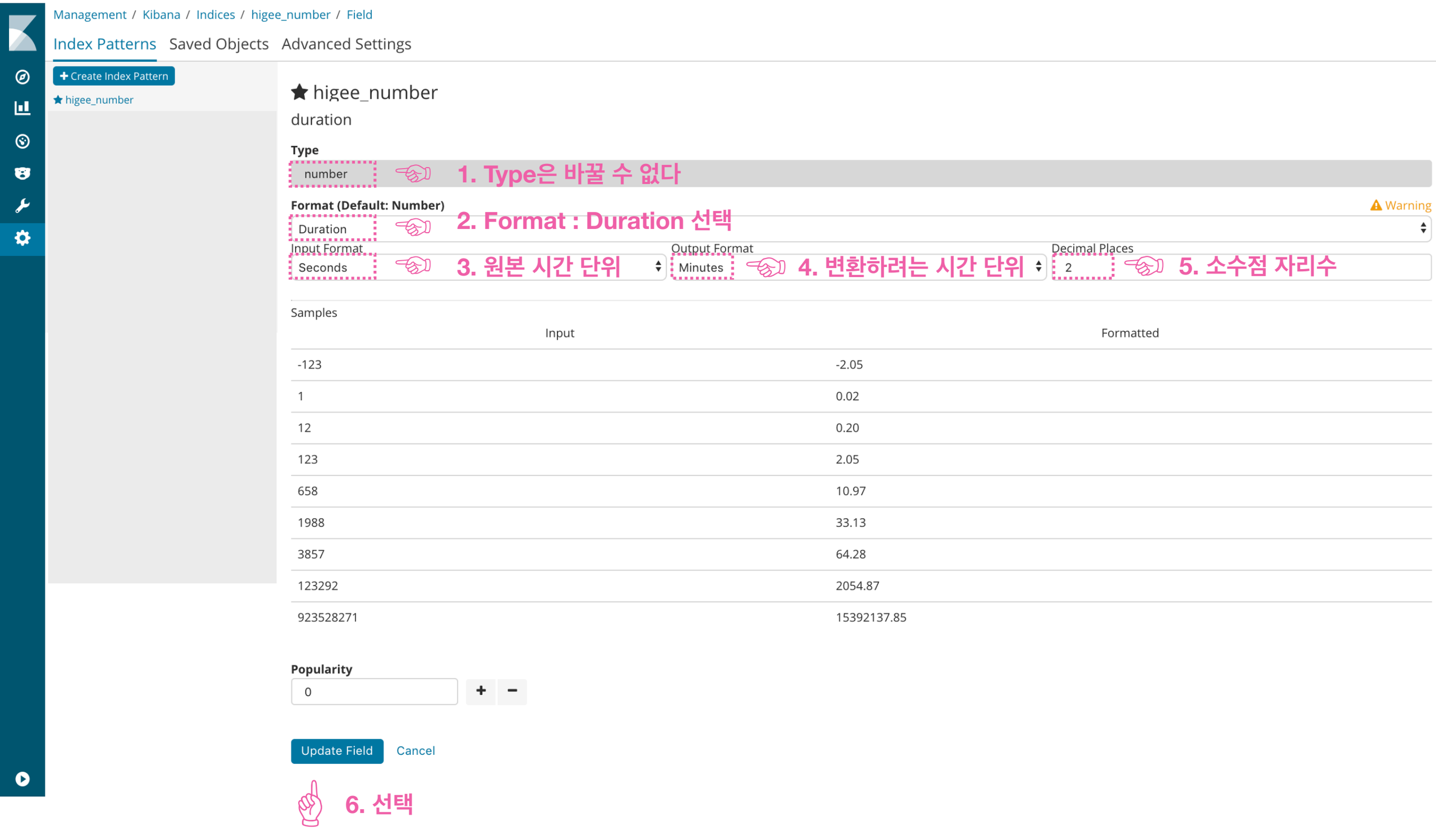


Number 들에 의미를 부여해보자

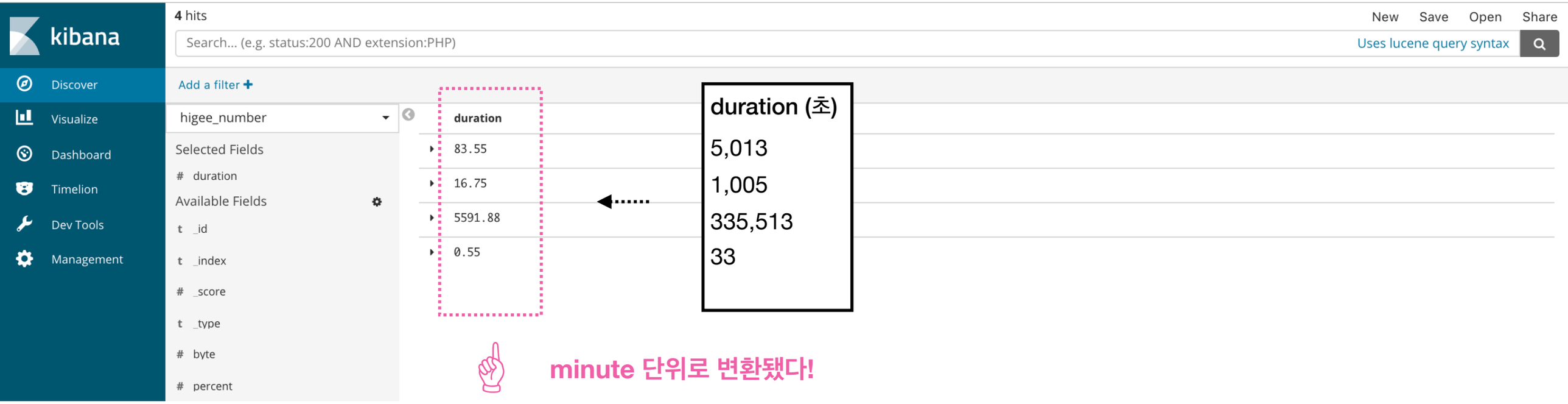
Data Format 변경하려는 Field의 Control 선택 - duration



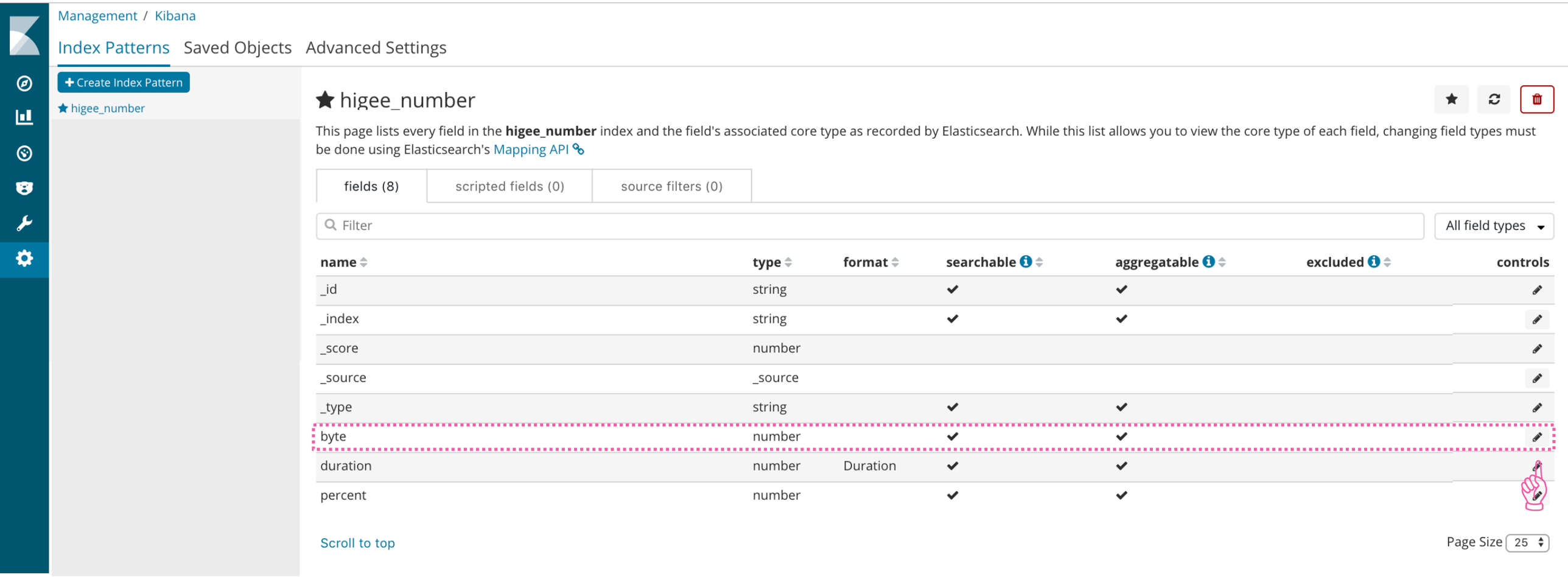
duration Field Format을 변경하자



Discover에 돌아가서 확인하자

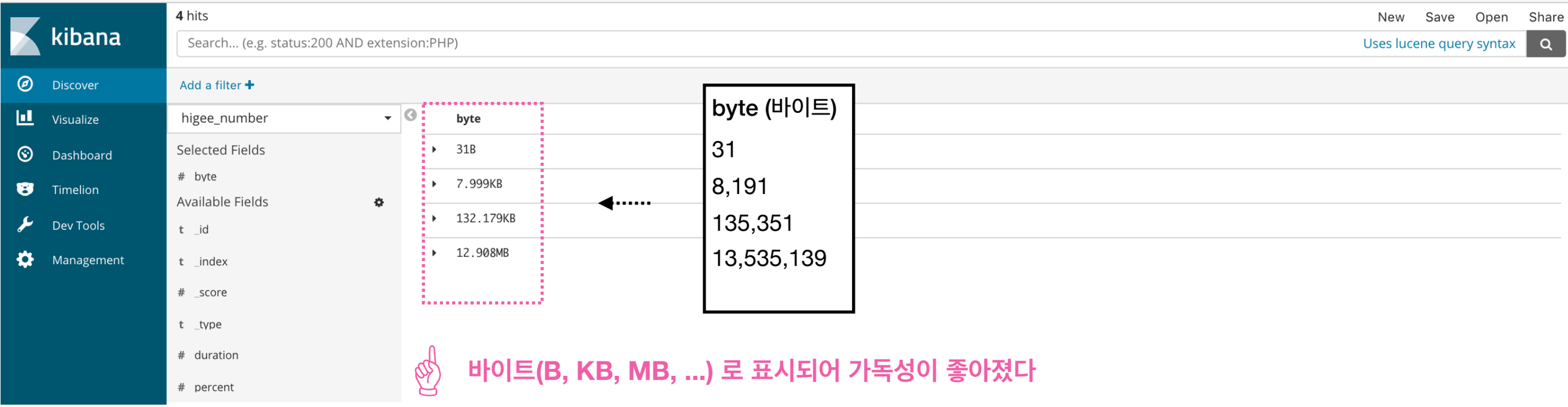


Data Format 변경하려는 Field의 Control 선택 - byte



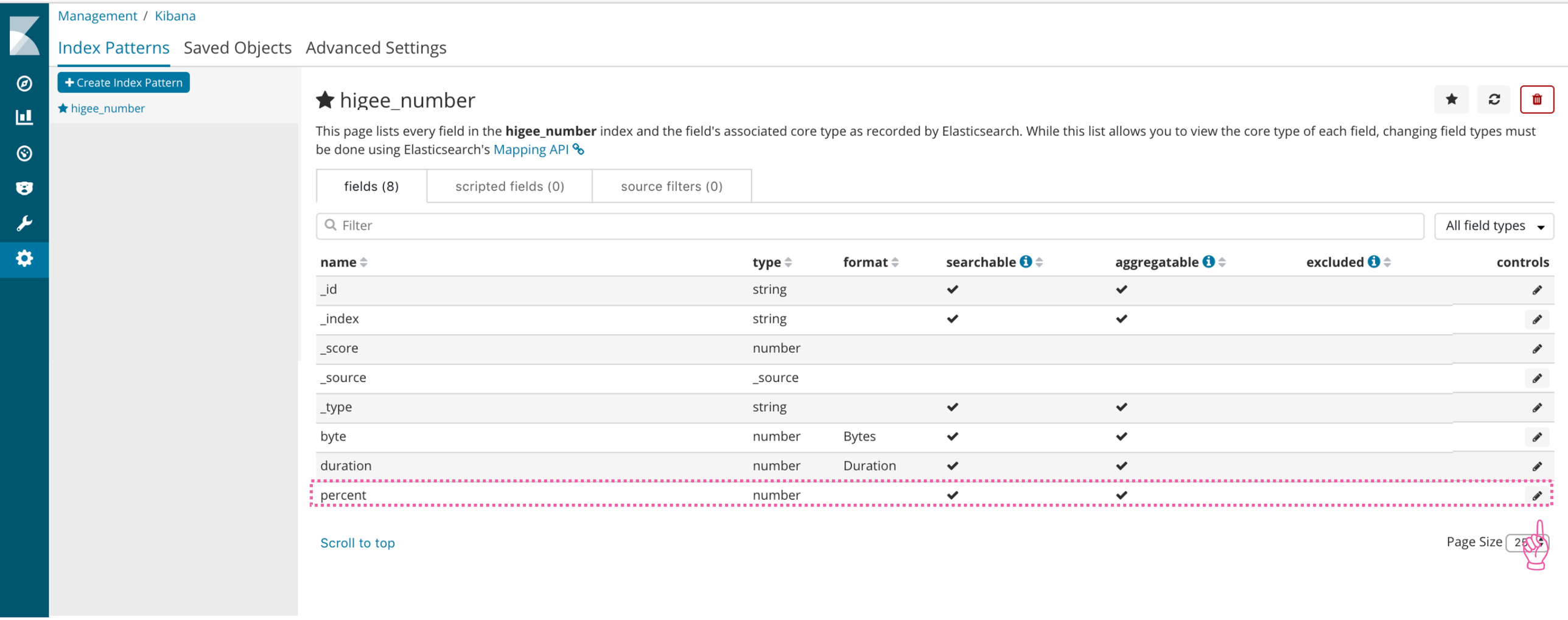
byte Field Format을 변경하자

Discover에 돌아가서 확인하자

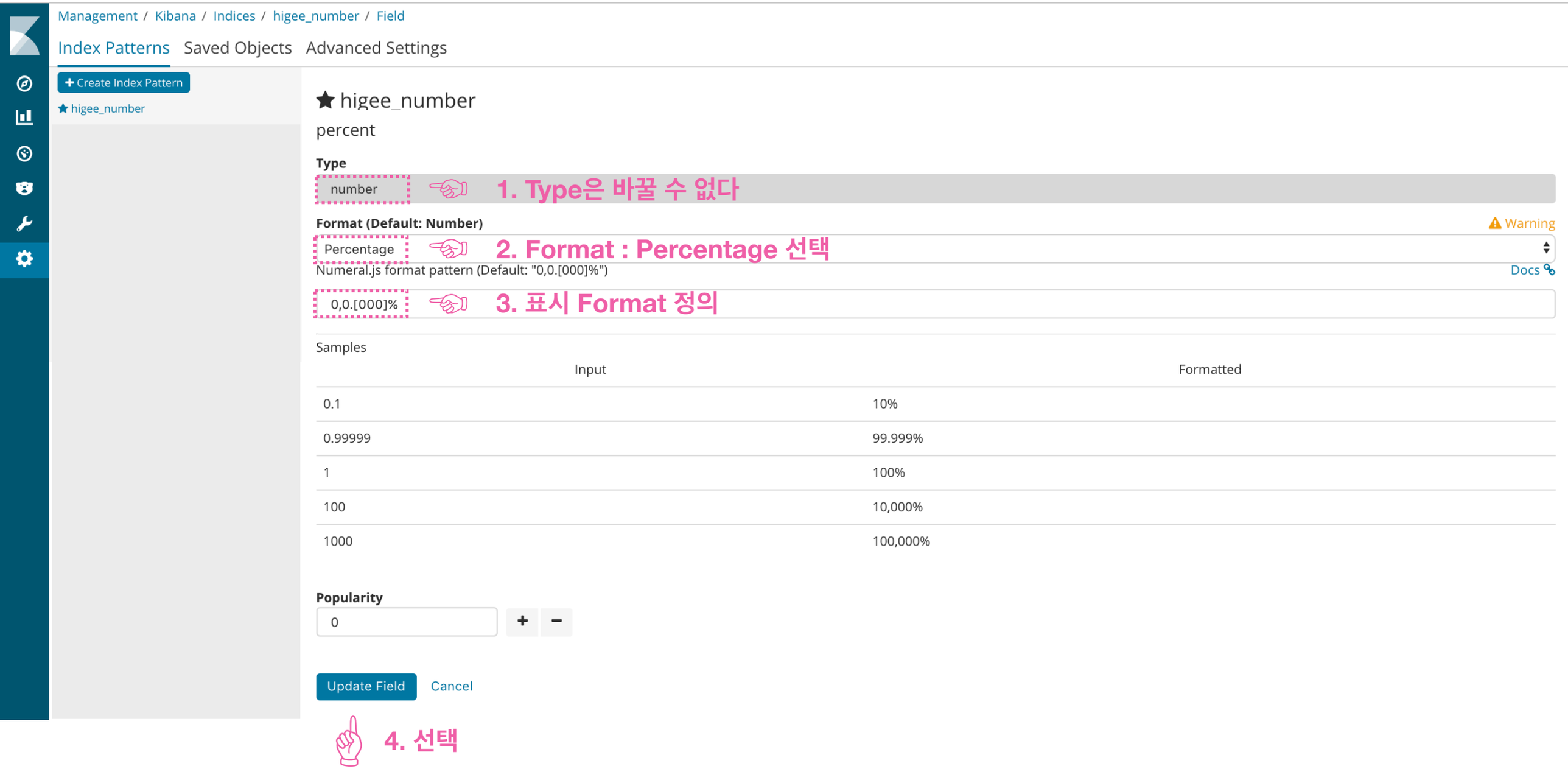


바이트(B, KB, MB, ...) 로 표시되어 가독성이 좋아졌다

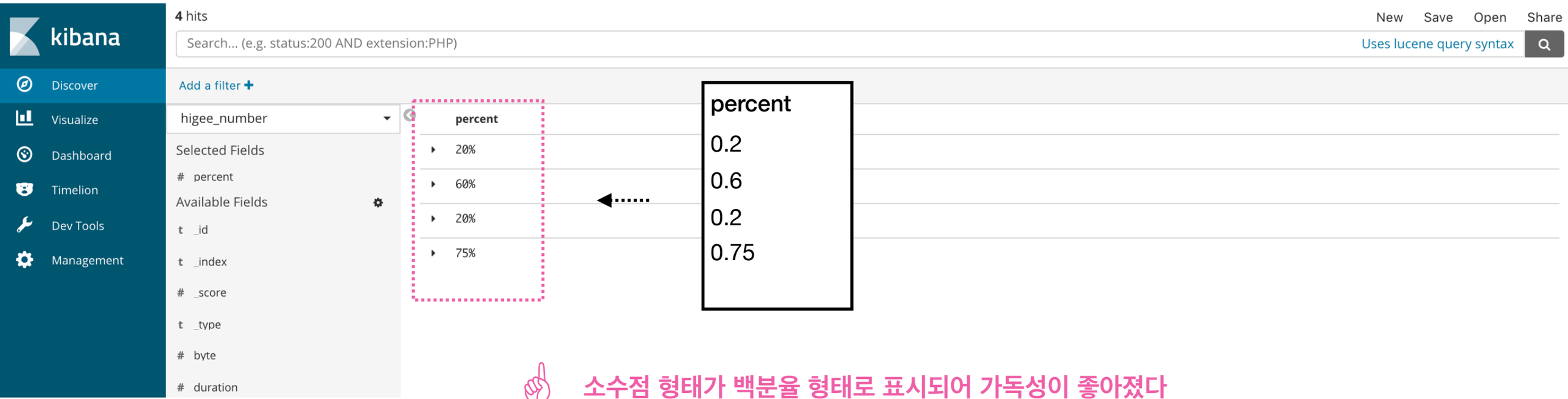
Data Format 변경하려는 Field의 Control 선택 - percent



duration Field Format을 변경하자



Discover에 돌아가서 확인하자



소수점 형태가 백분율 형태로 표시되어 가독성이 좋아졌다

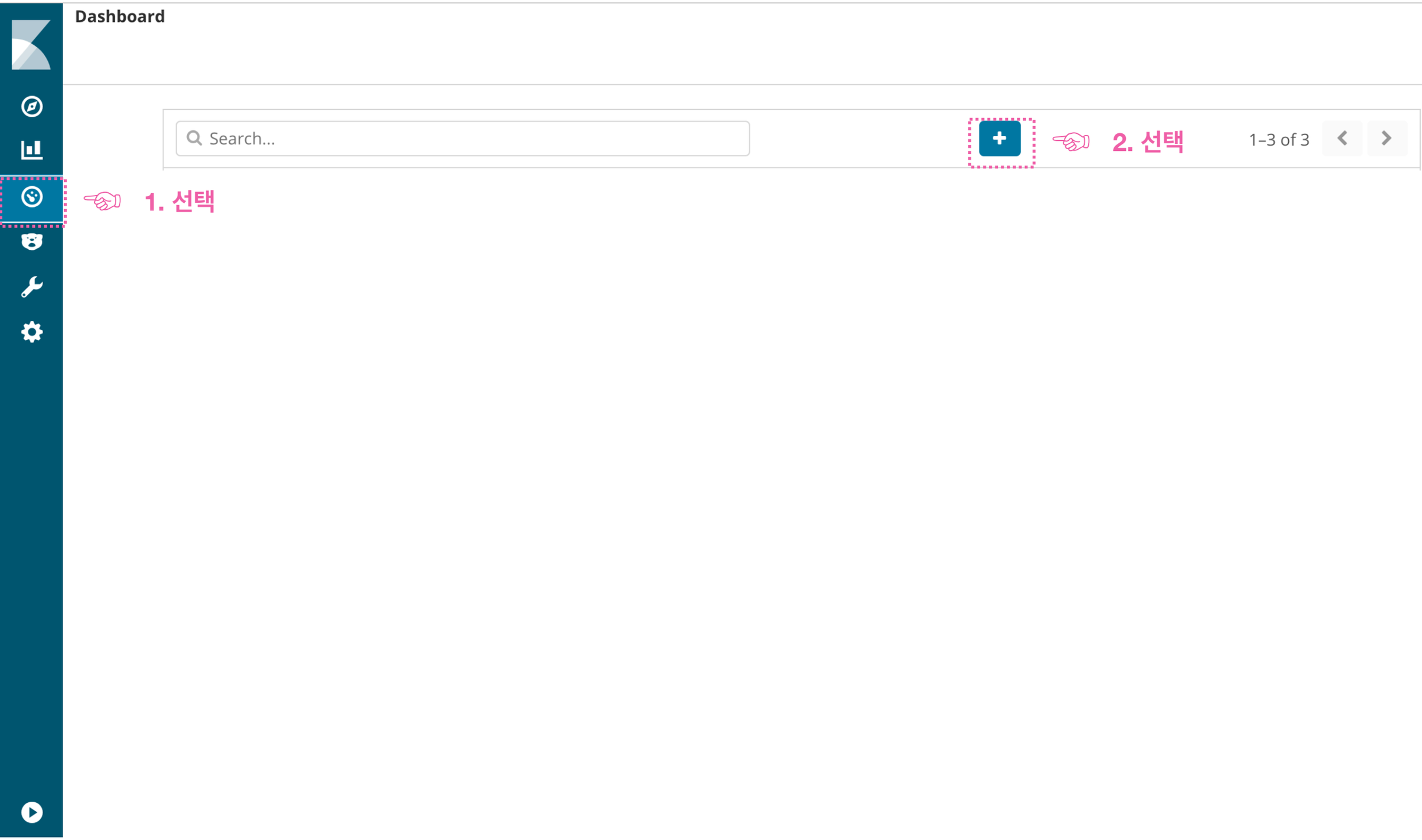
잠깐3

Data Format이 변하는 것이지 **Data Type**이 변하는 것이 아니다.

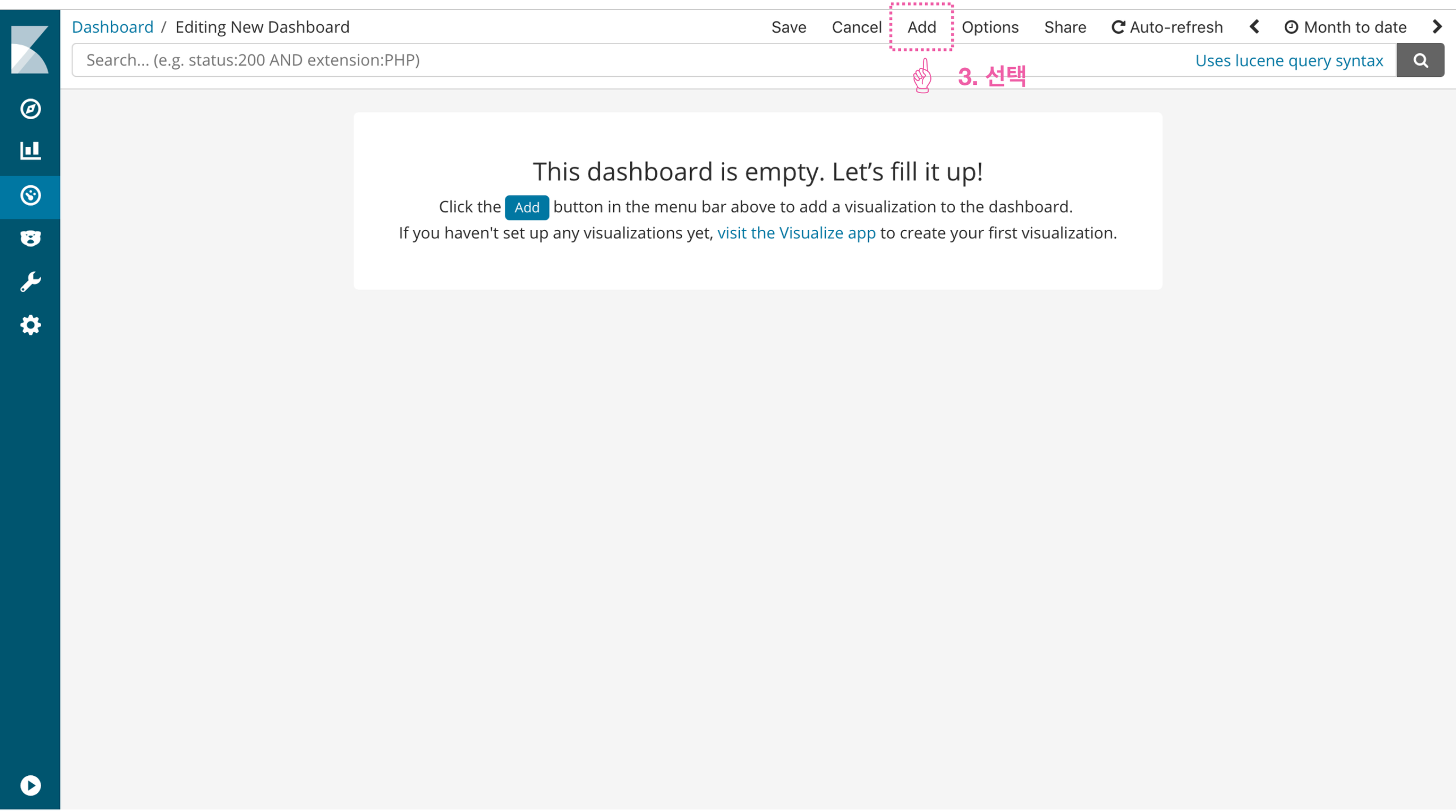
그러므로 Elasticsearch에 저장된 데이터 자체는 변하지 않는다!

Dashboard 기능

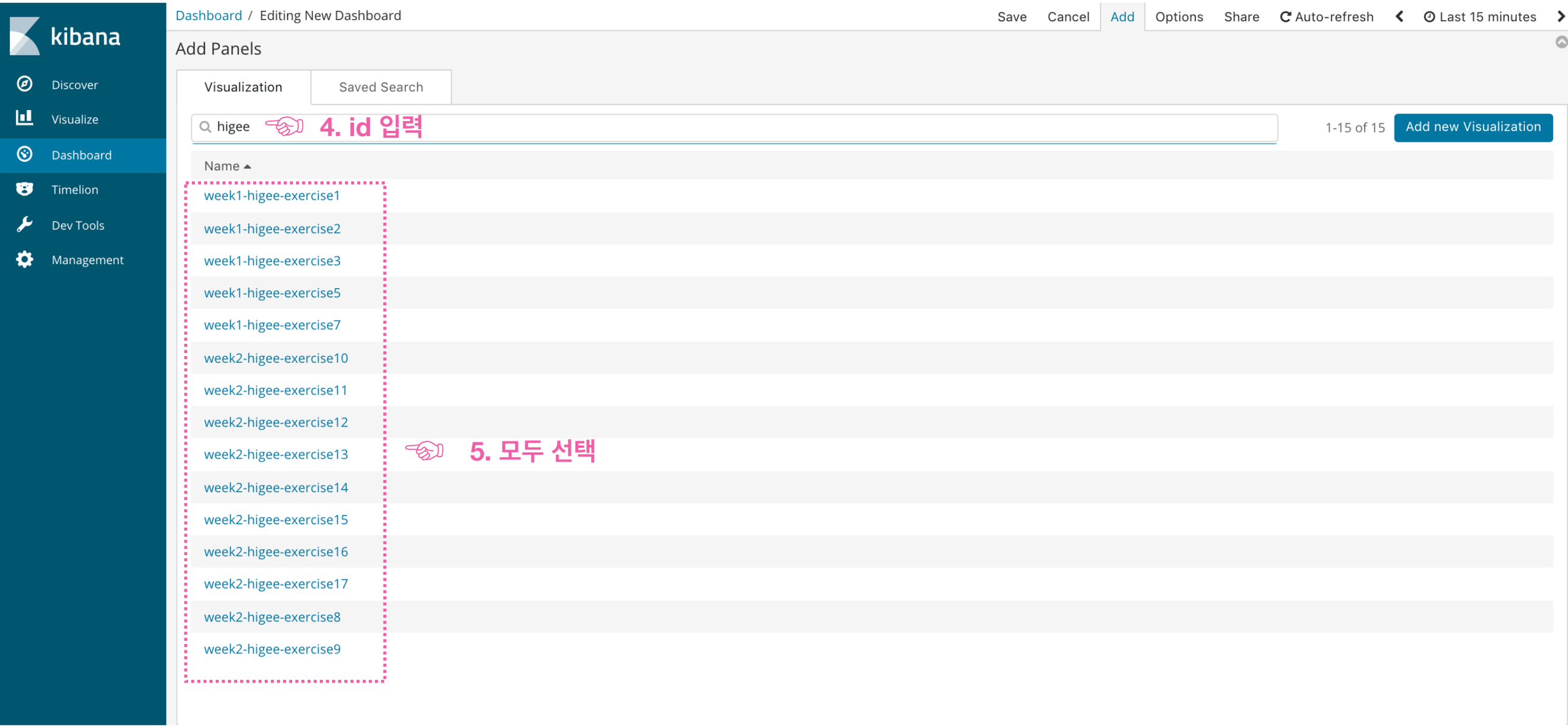
우선 새로운 Dashboard를 만들자



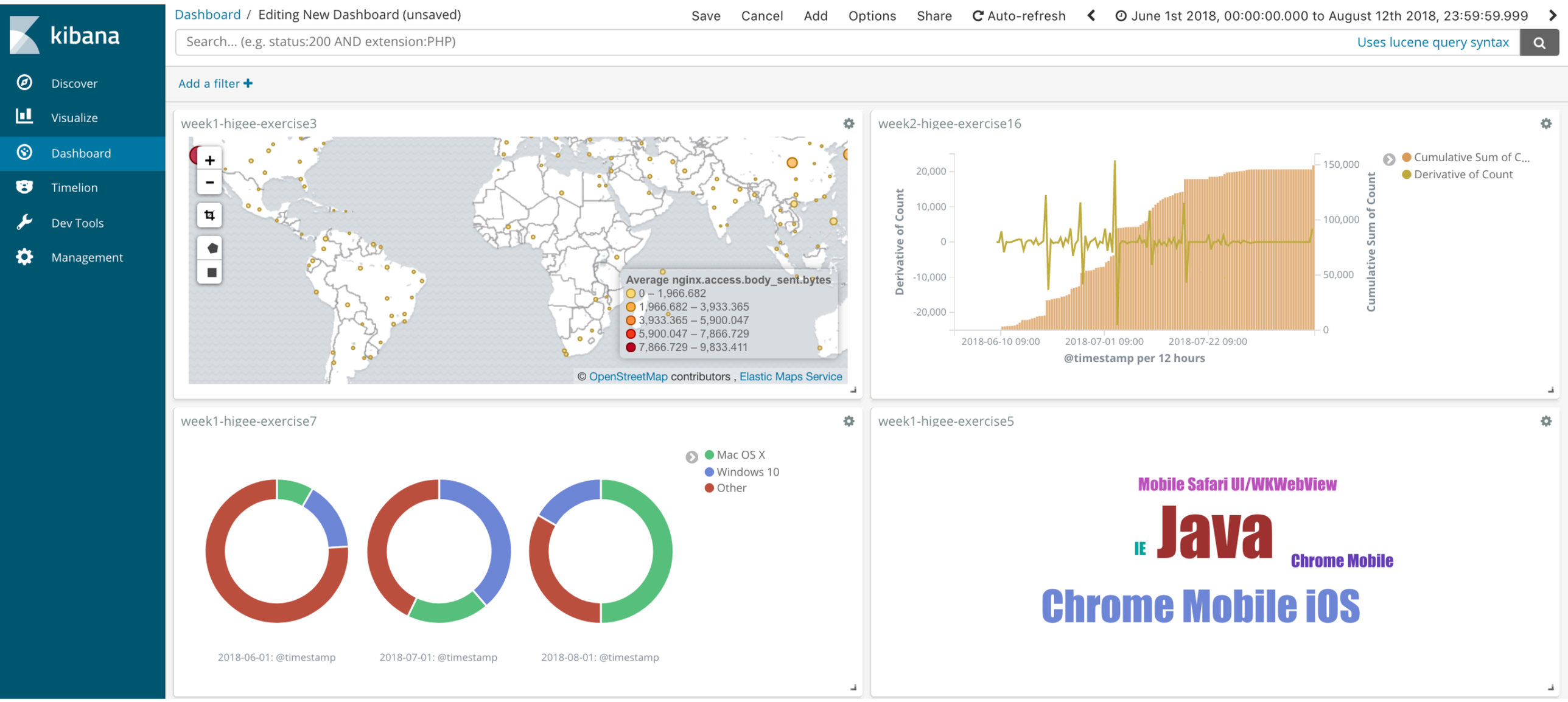
Dashboard에 visualizations를 추가하자



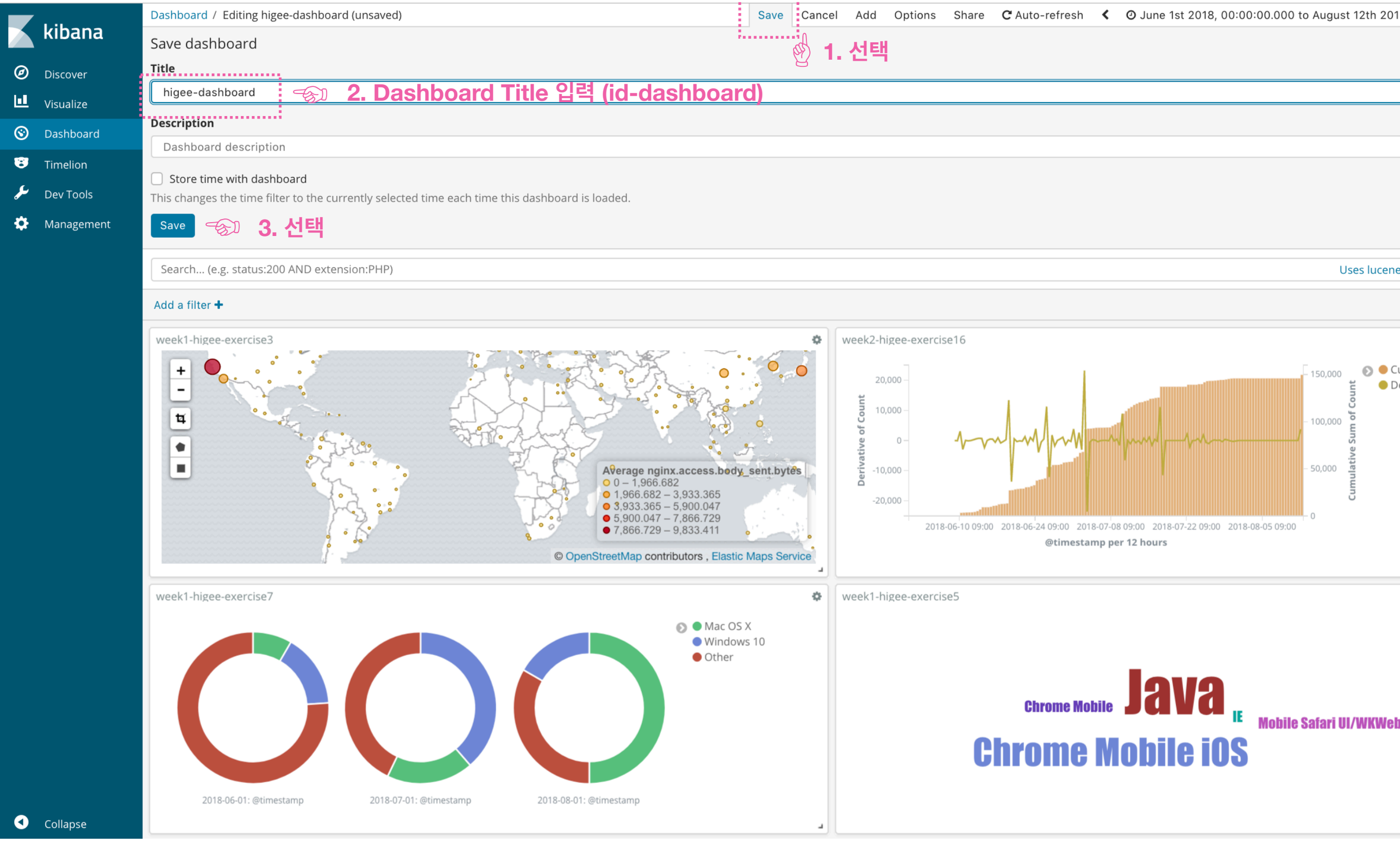
Dashboard에 visualizations를 추가하자



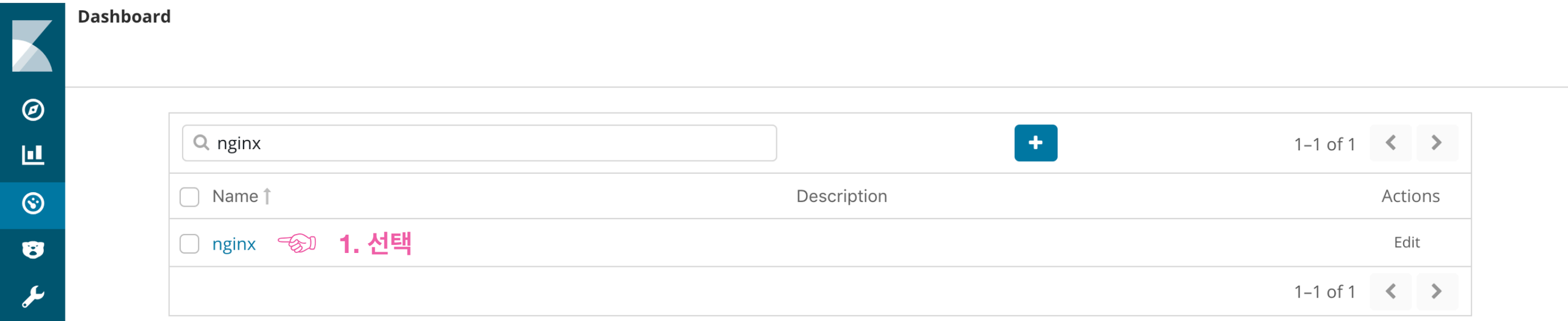
Visualization을 적당히 배치하자 (위치, 크기)



Dashboard를 저장하자



Dashboard를 조회하자



Dashboard를 조회하자

kibana

- Discover
- Visualize
- Dashboard
- Timelion
- Dev Tools
- Management

Collapse

Dashboard / nginx Full screen Share Clone Edit Auto-refresh June 1st 2018, 00:00:00.000 to August 12th 2018, 23:59:59.999

Search... (e.g. status:200 AND extension:PHP) Uses lucene query syntax

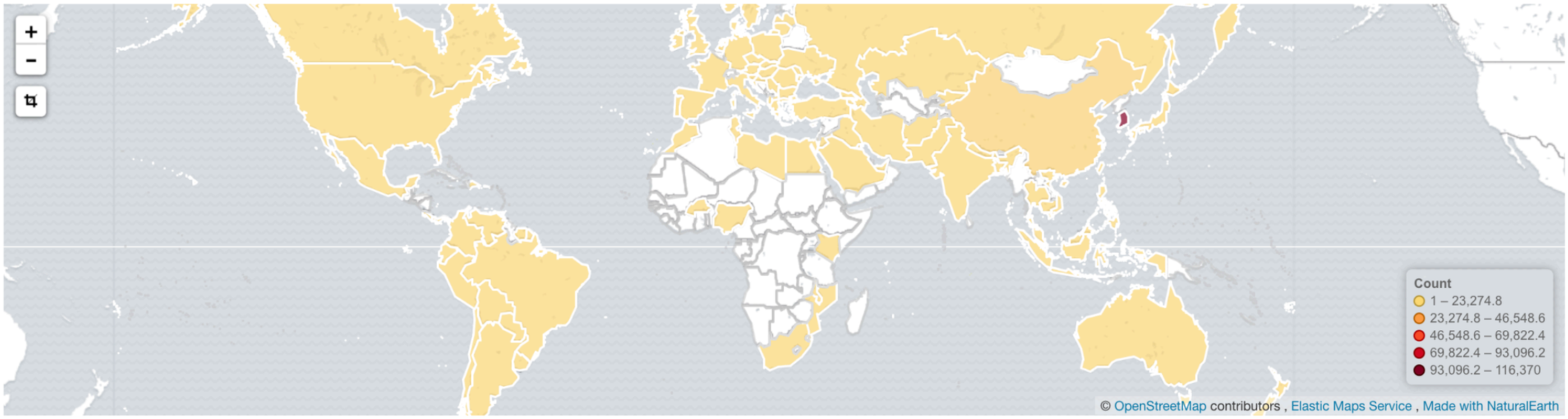
Add a filter +

[nginx] markdown

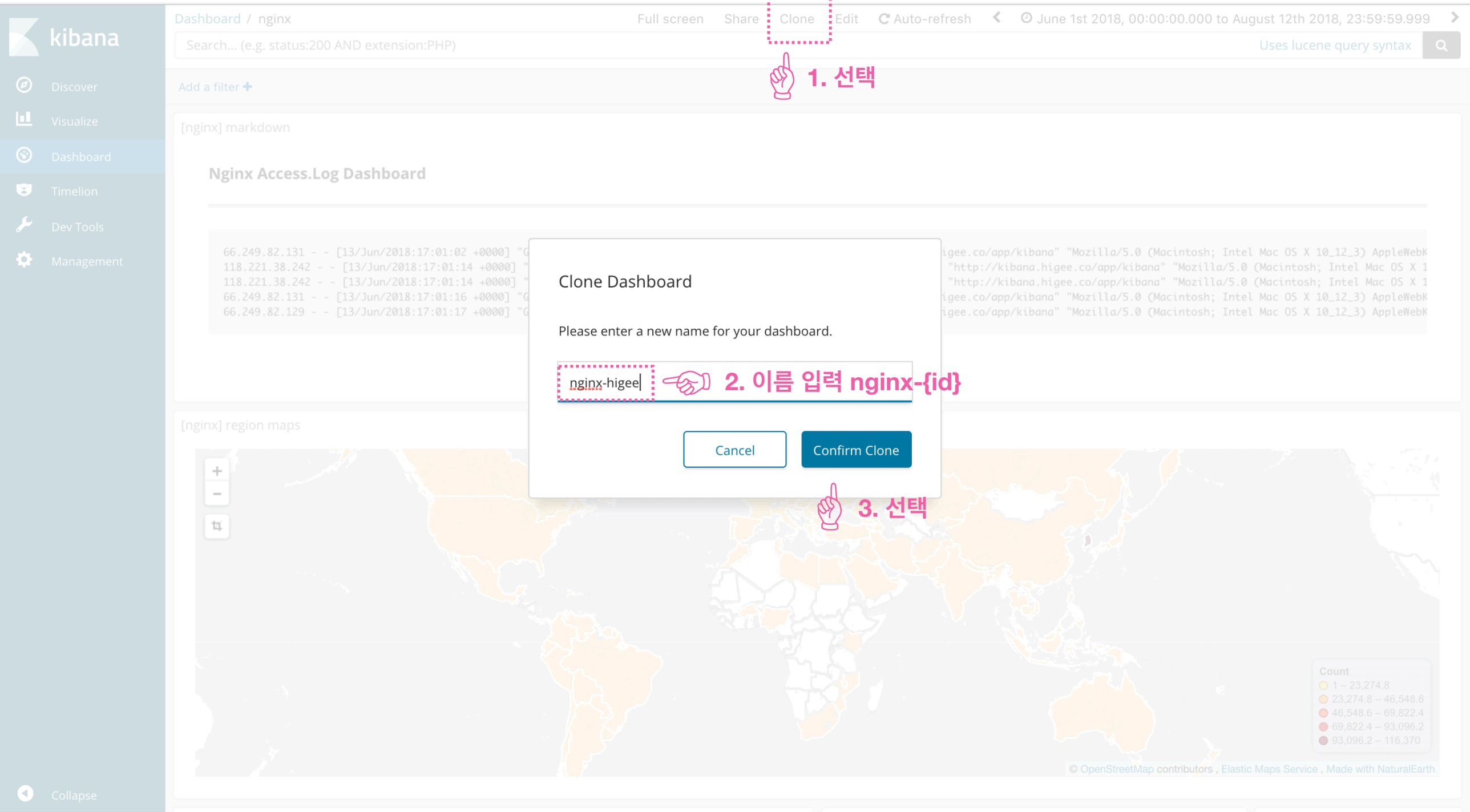
Nginx Access.Log Dashboard

```
66.249.82.131 - - [13/Jun/2018:17:01:02 +0000] "GET /ui/favicons/favicon-16x16.png HTTP/1.1" 304 0 "http://kibana.higee.co/app/kibana" "Mozilla/5.0 (Macintosh; Intel Mac OS X 10_12_3) AppleWebK
118.221.38.242 - - [13/Jun/2018:17:01:14 +0000] "POST /api/console/proxy?path=_aliases&method=GET HTTP/1.1" 200 107 "http://kibana.higee.co/app/kibana" "Mozilla/5.0 (Macintosh; Intel Mac OS X 1
118.221.38.242 - - [13/Jun/2018:17:01:14 +0000] "POST /api/console/proxy?path=_mapping&method=GET HTTP/1.1" 200 974 "http://kibana.higee.co/app/kibana" "Mozilla/5.0 (Macintosh; Intel Mac OS X 1
66.249.82.131 - - [13/Jun/2018:17:01:16 +0000] "GET /ui/favicons/favicon-32x32.png HTTP/1.1" 304 0 "http://kibana.higee.co/app/kibana" "Mozilla/5.0 (Macintosh; Intel Mac OS X 10_12_3) AppleWebK
66.249.82.129 - - [13/Jun/2018:17:01:17 +0000] "GET /ui/favicons/favicon-16x16.png HTTP/1.1" 304 0 "http://kibana.higee.co/app/kibana" "Mozilla/5.0 (Macintosh; Intel Mac OS X 10_12_3) AppleWebK
```

[nginx] region maps



Dashboard를 clone하자



Clone 받은 환경에서 Dashboard를 사용할 수 있다

kibana

Discover
Visualize
Dashboard
Timelion
Dev Tools
Management

Collapse

Dashboard / nginx-higee

Full screen Share Clone Edit Auto-refresh June 1st 2018, 00:00:00.000 to August 12th 2018, 23:59:59.999

Search... (e.g. status:200 AND extension:PHP) Uses lucene query syntax

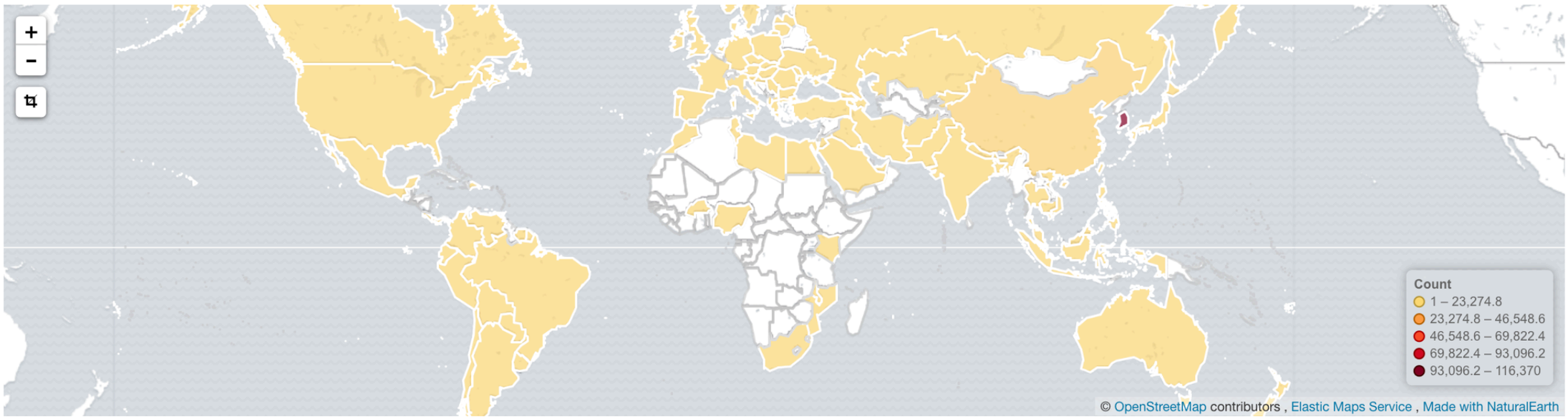
Add a filter +

[nginx] markdown

Nginx Access.Log Dashboard

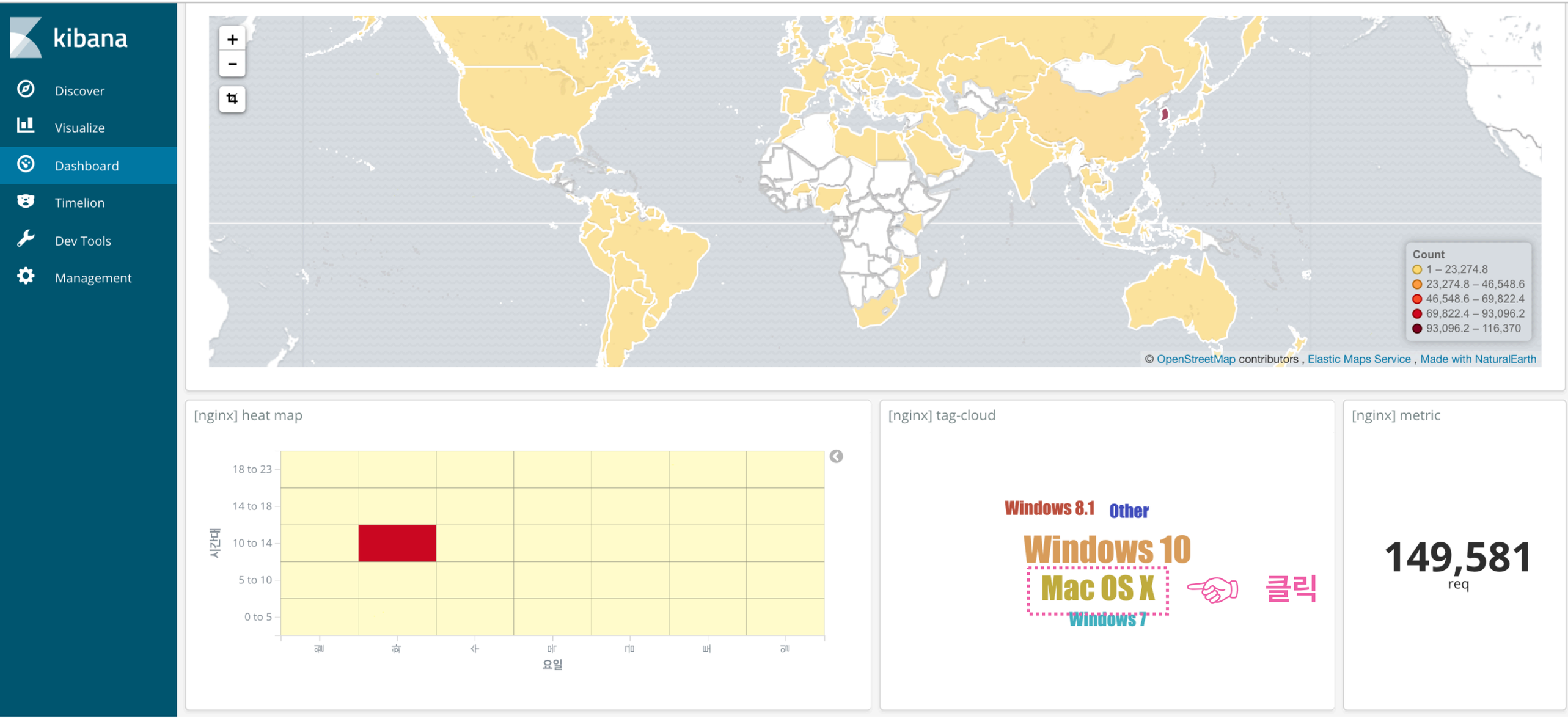
```
66.249.82.131 - - [13/Jun/2018:17:01:02 +0000] "GET /ui/favicons/favicon-16x16.png HTTP/1.1" 304 0 "http://kibana.higee.co/app/kibana" "Mozilla/5.0 (Macintosh; Intel Mac OS X 10_12_3) AppleWebK
118.221.38.242 - - [13/Jun/2018:17:01:14 +0000] "POST /api/console/proxy?path=_aliases&method=GET HTTP/1.1" 200 107 "http://kibana.higee.co/app/kibana" "Mozilla/5.0 (Macintosh; Intel Mac OS X 1
118.221.38.242 - - [13/Jun/2018:17:01:14 +0000] "POST /api/console/proxy?path=_mapping&method=GET HTTP/1.1" 200 974 "http://kibana.higee.co/app/kibana" "Mozilla/5.0 (Macintosh; Intel Mac OS X 1
66.249.82.131 - - [13/Jun/2018:17:01:16 +0000] "GET /ui/favicons/favicon-32x32.png HTTP/1.1" 304 0 "http://kibana.higee.co/app/kibana" "Mozilla/5.0 (Macintosh; Intel Mac OS X 10_12_3) AppleWebK
66.249.82.129 - - [13/Jun/2018:17:01:17 +0000] "GET /ui/favicons/favicon-16x16.png HTTP/1.1" 304 0 "http://kibana.higee.co/app/kibana" "Mozilla/5.0 (Macintosh; Intel Mac OS X 10_12_3) AppleWebK
```

[nginx] region maps

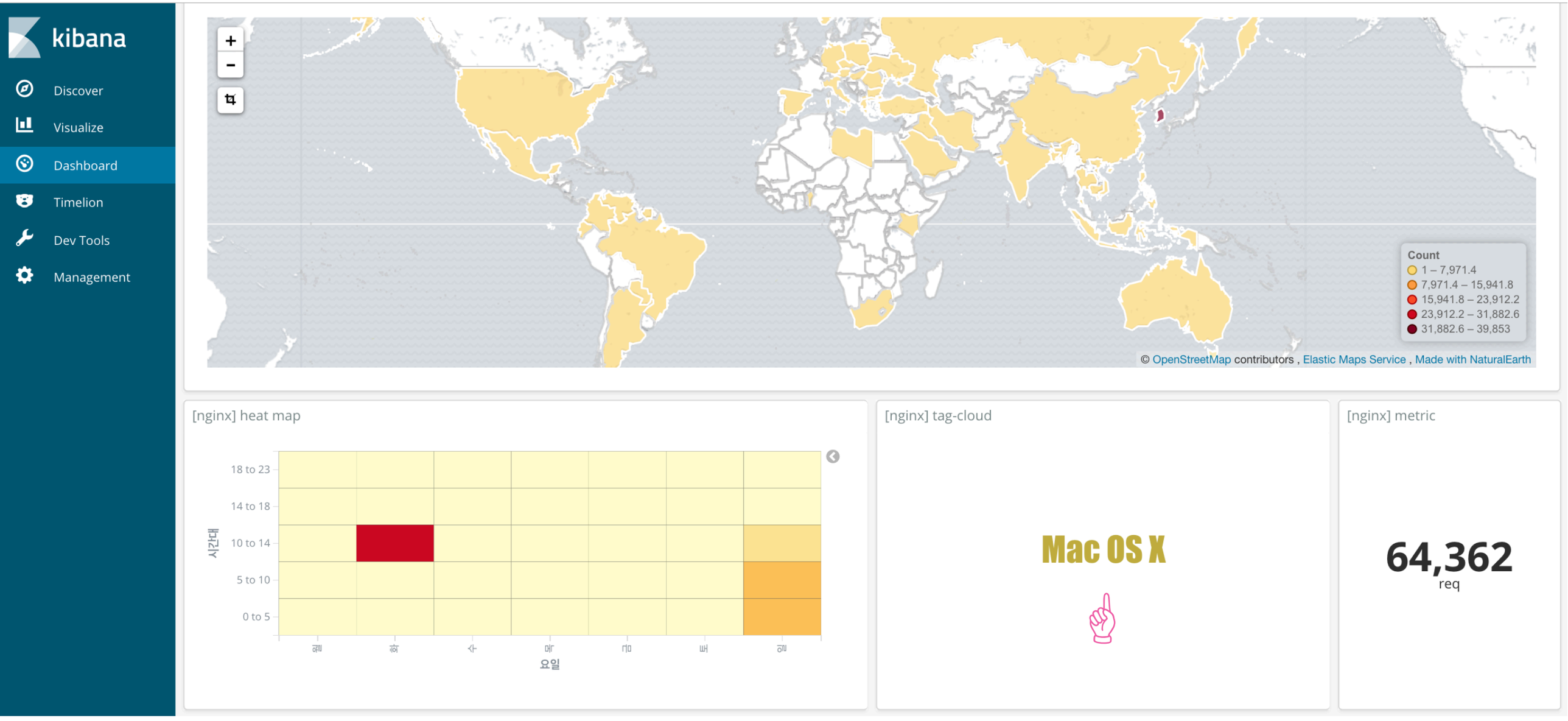


Dashboard가 Interactive하다!

아래의 Dashboard에서 “Mac OS X”에 해당하는 데이터만 보고 싶다고 하자



Dashboard 전체적인 UI는 유지한채 “Mac OS X”에 해당하는 값만 필터링되어 보여진다



특정 기간을 집중해서 보고 싶으면 Drag를 하자

kibana

- Discover
- Visualize
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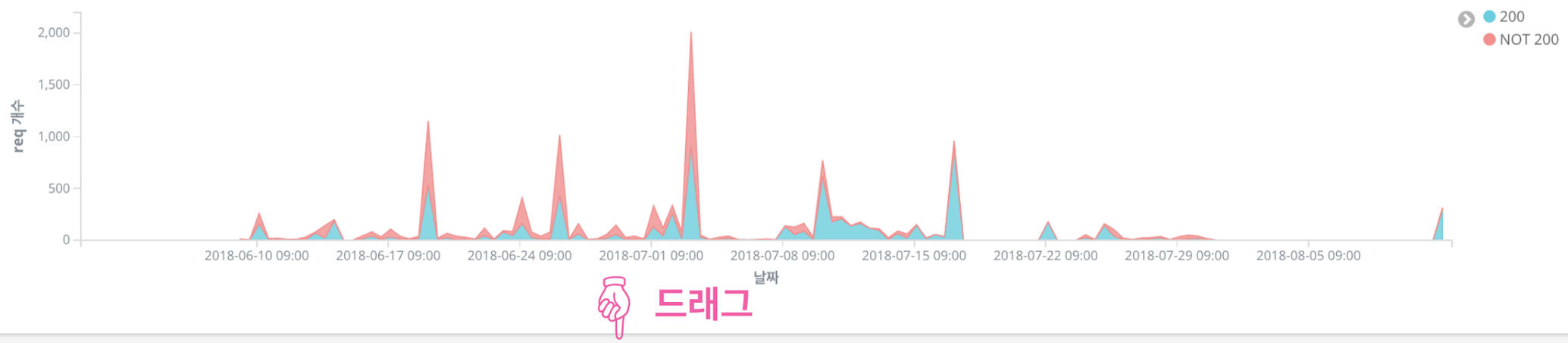
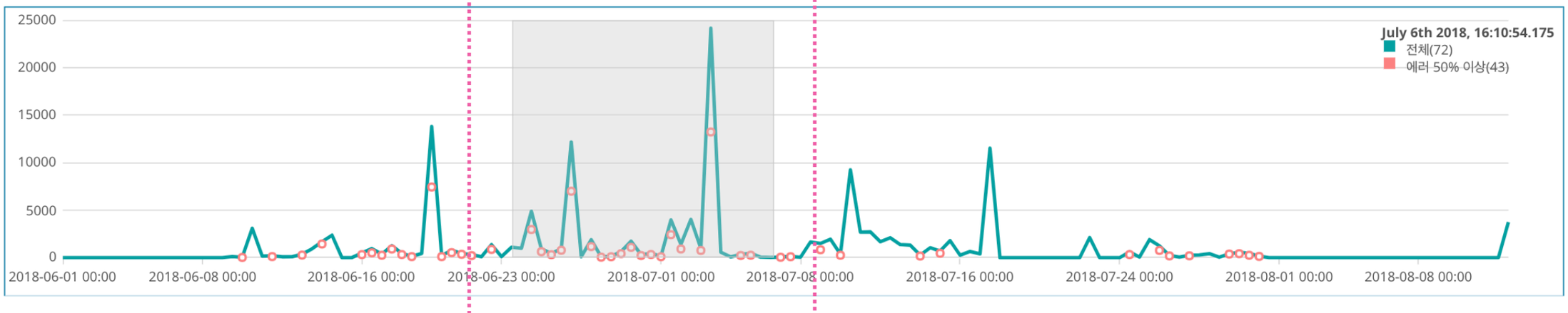
- Timelion
- Dev Tools
- Management

Collapse

[nginx] area chart



[nginx] Timelion



[nginx] Data Table

날짜	도시	데이터 크기	os	개수	평균 데이터 크기
2018-06-09	Seoul	0 to 1,000	iOS	34	152.529
2018-06-09	Seoul	1,000 to +∞	iOS	20	145,340.5
2018-06-09	Quito	0 to 1,000	Windows 10	2	328
2018-06-10	Seoul	0 to 1,000	Mac OS X	1,553	406.161
2018-06-10	Seoul	0 to 1,000	iOS	100	39.75

특정 기간을 집중해서 보고 싶으면 Drag를 하자

Dashboard / nginx-higee Full screen Share Clone Edit Auto-refresh June 23rd 2018, 12:50:20.561 to July 5th 2018, 23:35:05.037

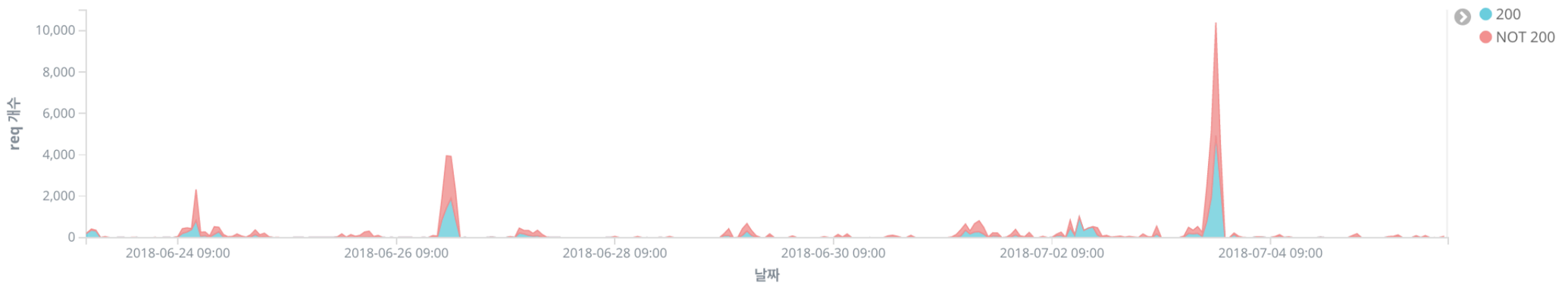
Search... (e.g. status:200 AND extension:PHP) Uses lucene query syntax

Add a filter +

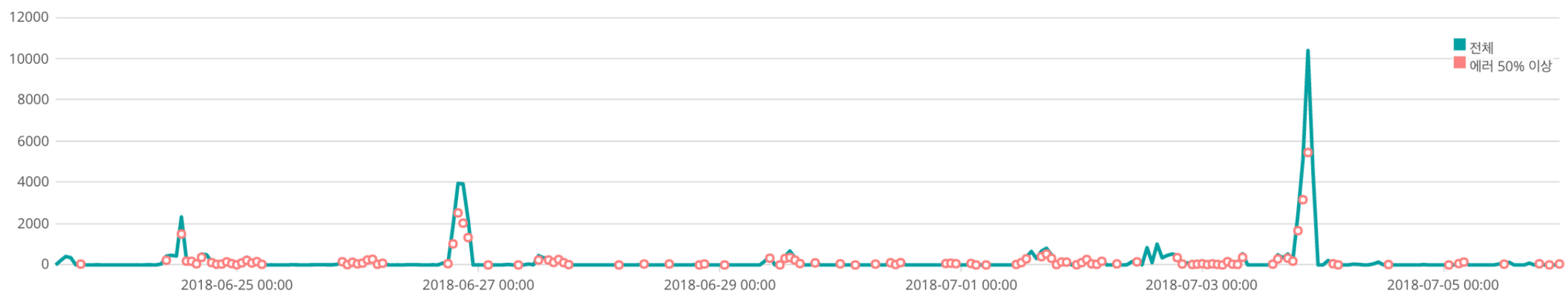
kibana

- Discover
- Visualize
- Dashboard
- Timelion
- Dev Tools
- Management

[nginx] area chart



[nginx] Timelion



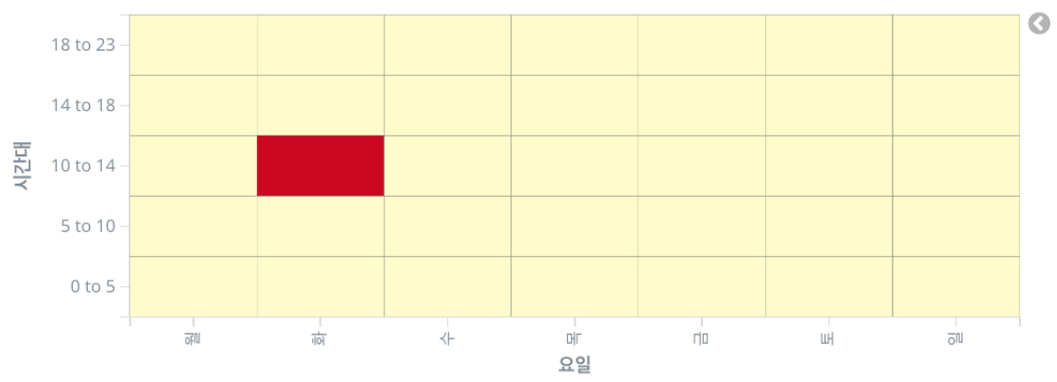
드래그한 기간 내의 데이터만 보여진다

특정 지역의 데이터만 보고 싶으면 polygon/rectangle을 그리자

kibana

- Discover
- Visualize
- Dashboard
- Timelion
- Dev Tools
- Management

[nginx] heat map

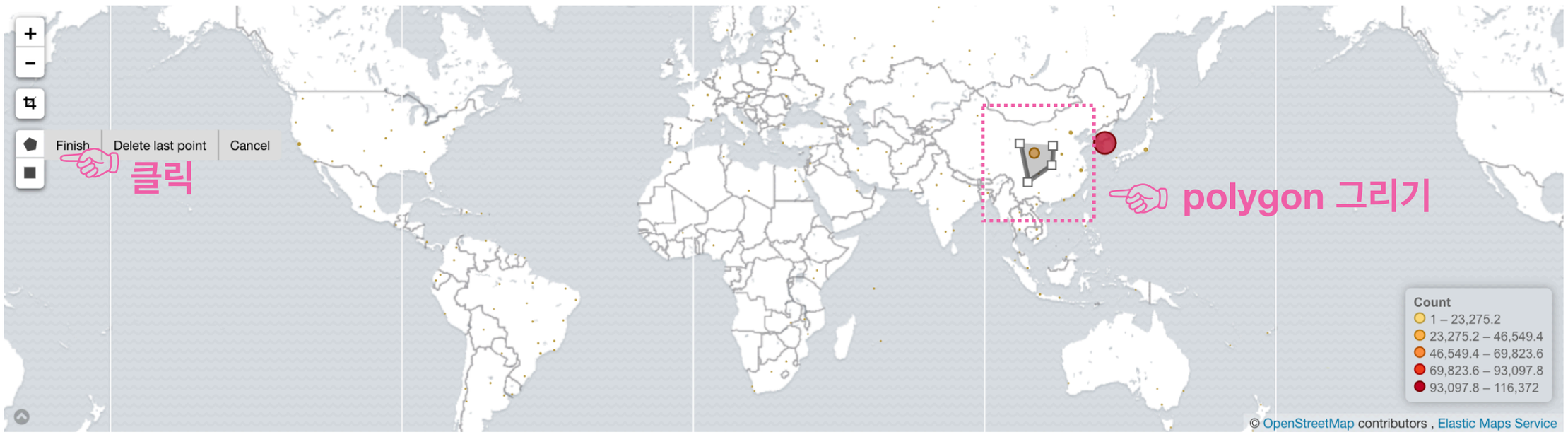


[nginx] tag-cloud

[nginx] metric

149,581
req

[nginx] coordinate maps



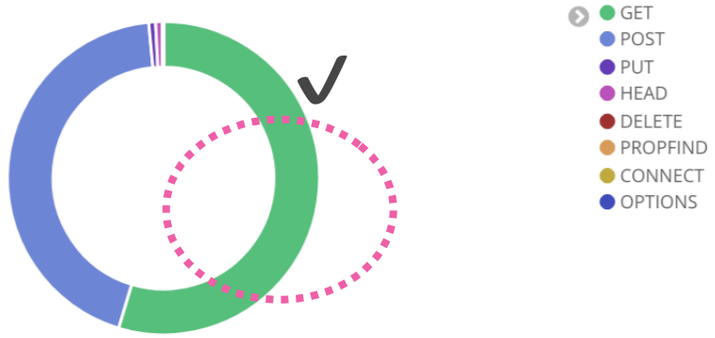
여러 visualization을 클릭하면서 Interactive한 Dashboard를 경험해보자

kibana

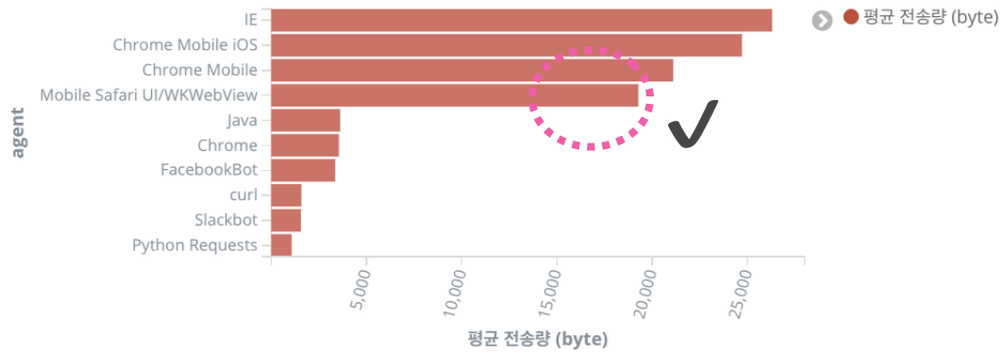
- Discover
- Visualize
- Dashboard
- Timelion
- Dev Tools
- Management

Collapse

[nginx] pie chart



[nginx] horizontal bar

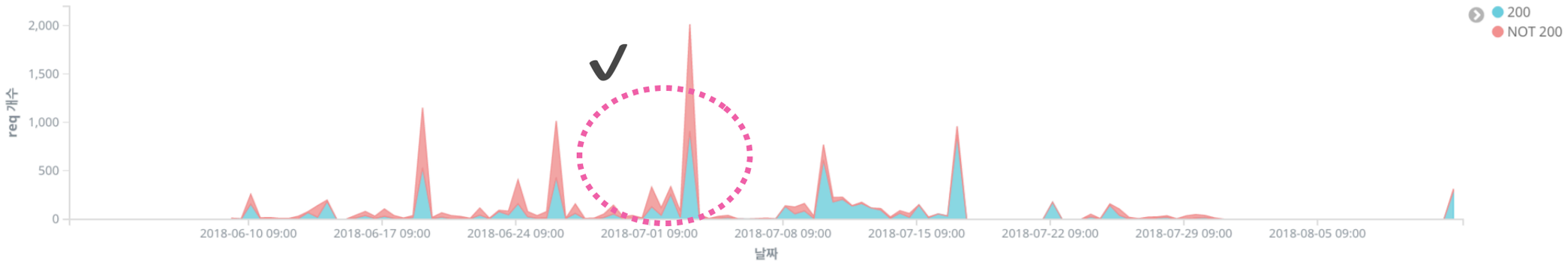


[nginx] search

1–50 of 149,581

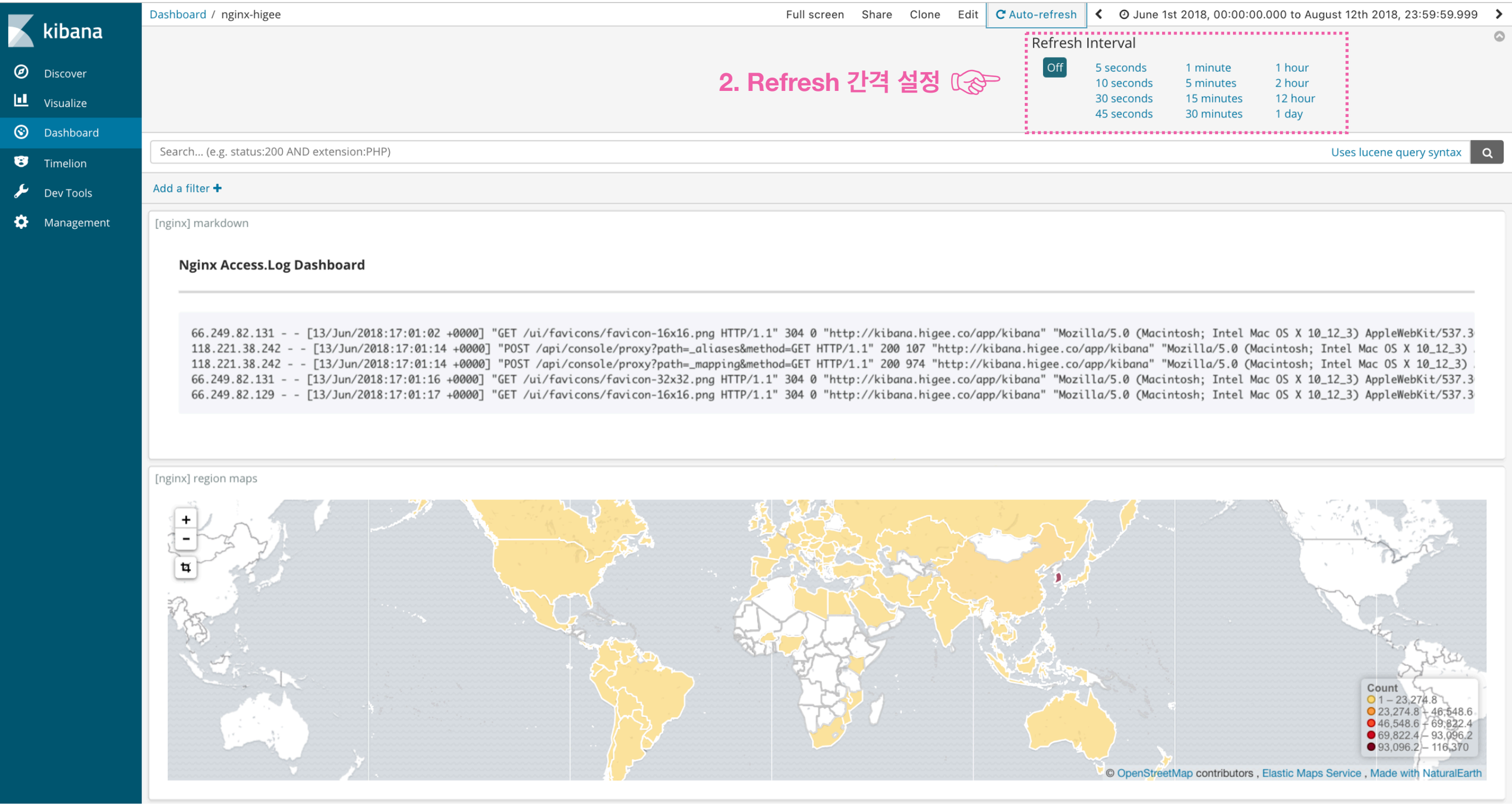
Time	nginx.access.url	nginx.access.response_code	nginx.access.body_sent.bytes
July 2nd 2018, 11:21:43.000	/bundles/kibana.bundle.js?v=16627	200	5,392,521
June 10th 2018, 22:49:58.000	/bundles/vendors.bundle.js?v=16627	200	2,018,434
June 9th 2018, 16:28:52.000	/bundles/kibana.bundle.js?v=15571	200	1,662,257
June 9th 2018, 16:15:41.000	/bundles/kibana.bundle.js?v=15571	200	1,662,123
June 9th 2018, 16:15:41.000	/bundles/kibana.bundle.js?v=15571	200	1,662,046

[nginx] area chart



Auto Refresh 기능을 이용하자

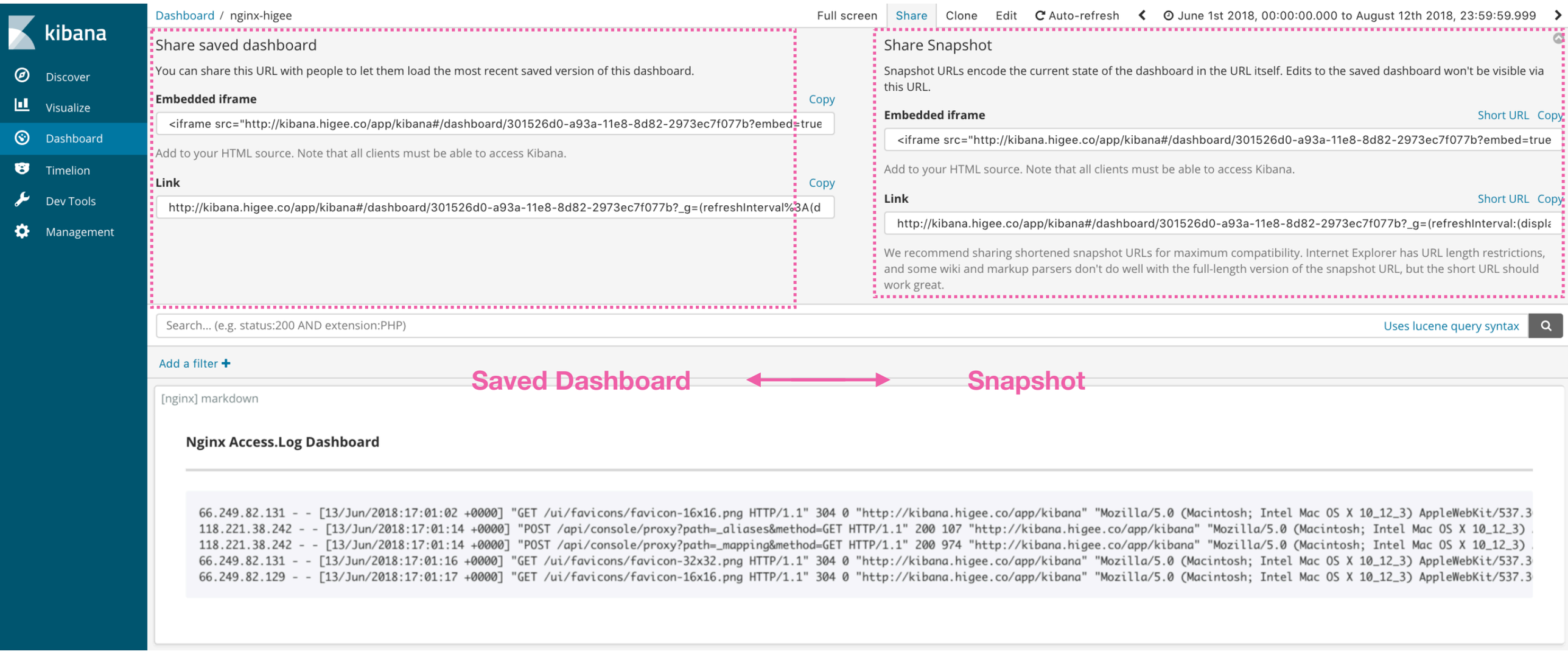
1. Auto-refresh 선택



설정한 간격 마다 Index 데이터를 확인하여 새로운 데이터가 있으면 Dashboard에 반영한다

dashboard를 공유하자

1. Share 선택



dashboard를 공유하자

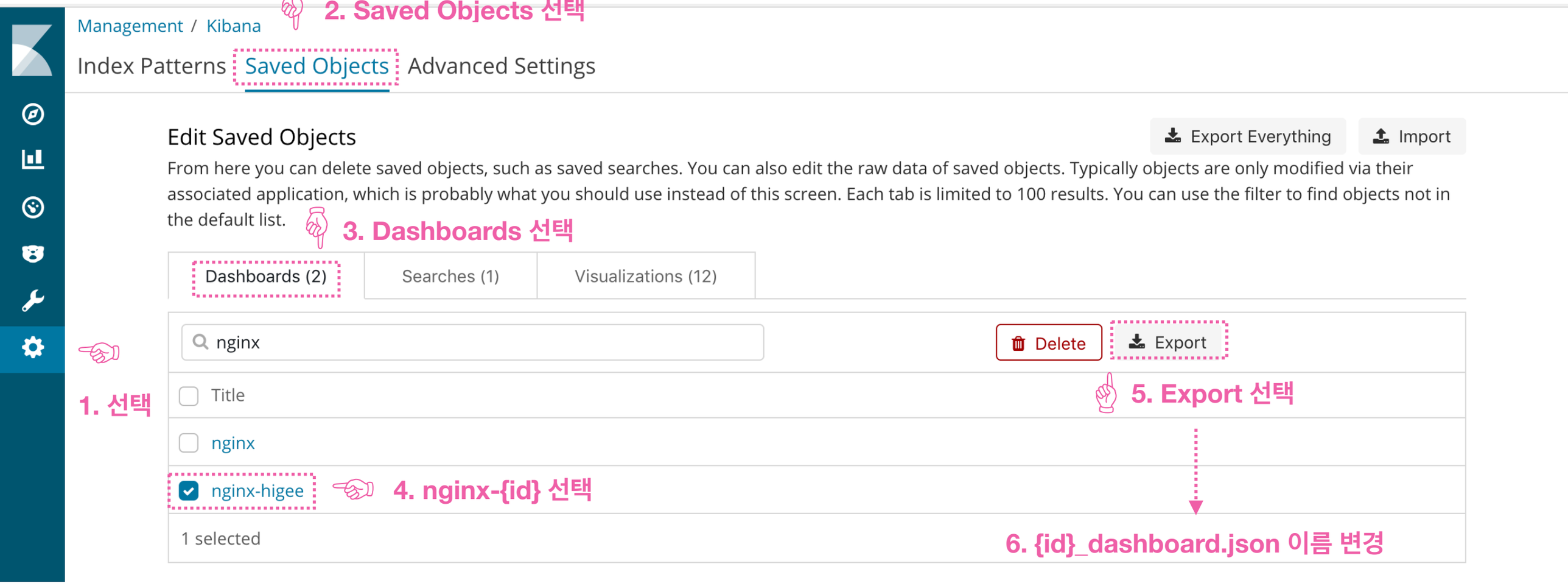
	saved dashboard	Snapshot
dashboard 공유하기 전 변경 사항	반영 o	**반영 o**
dashboard 공유 후 변경 사항	반영 o	**반영 x (url이 변경됨)**

Dashboard/Visualization export

Dashboard 및 Visualize Object를 Import/Export 할 수 없나?

- ~~데이터 백업~~
- **UI** 백업

Dashboard export



Dashboard export

higee-dashboard.json


```
[
  {
    "_id": "a267afc0-a942-11e8-8d82-2973ec7f077b",
    "_type": "dashboard",
    "_source": {
      "title": "nginx-higee",
      "hits": 0,
      "description": "",
      "panelsJSON": "[{\"embeddableConfig\":{\"vis\":{\"defaultColors\":{\"0 - 350\":\"rgb(247,252,245)\",\"1,050 - 1,400\":\"rgb(35,139,69)\",\"350 - 700\":\"rgb(199,233,192)\",
      "optionsJSON": "{\"darkTheme\":false,\"hidePanelTitles\":false,\"useMargins\":true}",
      "version": 1,
      "timeRestore": false,
      "kibanaSavedObjectMeta": {
        "searchSourceJSON": "{\"query\":{\"language\":\"lucene\",\"query\":\"\"},\"filter\":[],\"highlightAll\":true,\"version\":true}"
      }
    }
  }
]
```

Dashboard export

대시보드를 export 하면 export.json으로 저장한 json 파일이 생기는데,

대시보드에 어떤 visualization이 어느 위치에 어떤 크기로 생성되었는지에 관한 정보를 담고 있다.

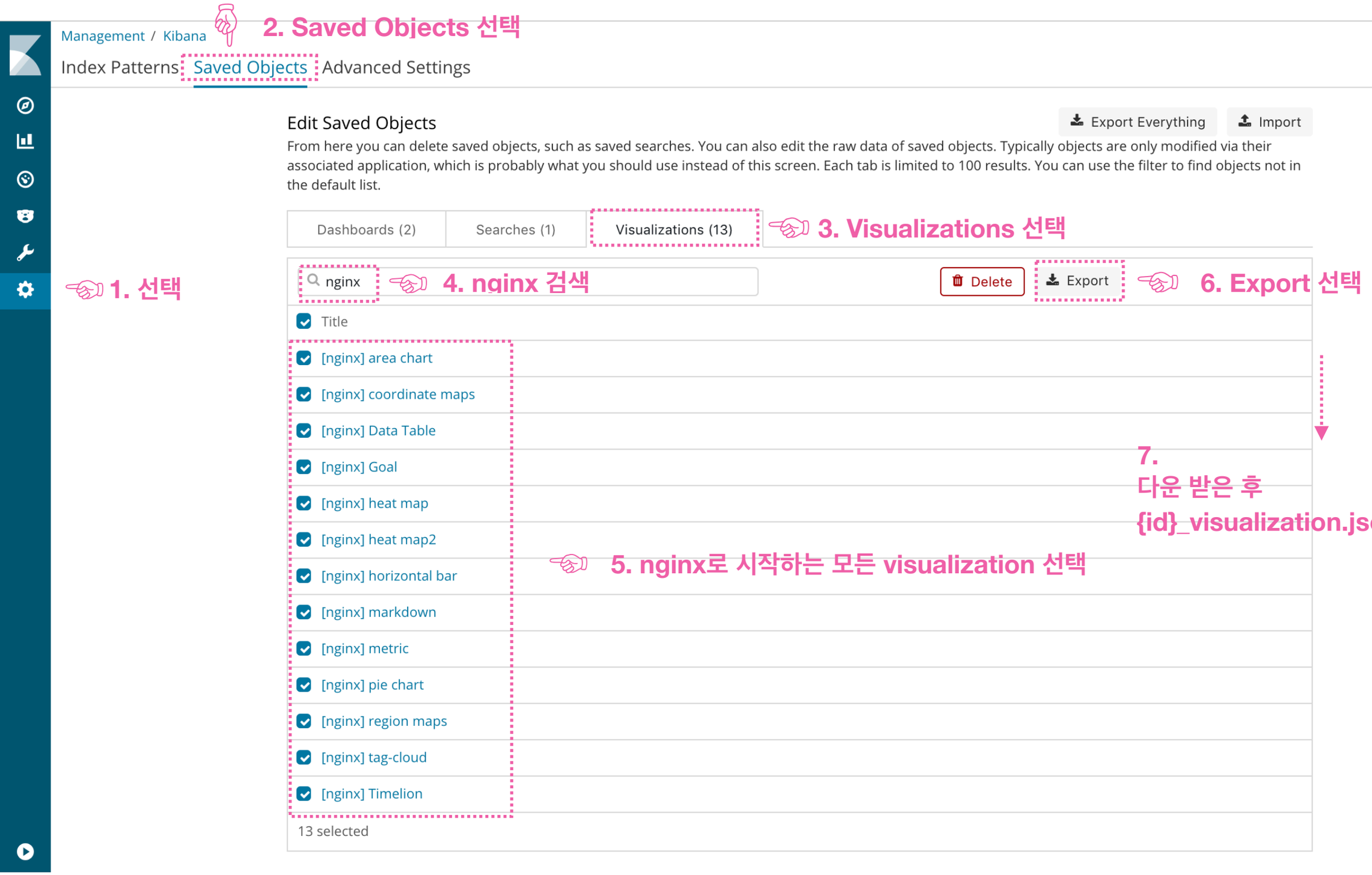
↓

개별 visualization 들이 어떤 aggregation으로 만들어졌는지 등에 관한 정보는 없다.

↓

Visualization 백업 필요!

Visualization export



Visualization export

higee-visualizations.json


```
[
  {
    "_id": "7a9123a0-6f27-11e8-a0fb-51f0eb991705",
    "_type": "visualization",
    "_source": {
      "title": "[nginx] coordinate maps",
      "visState": "{\"title\":\"[nginx] coordinate maps\",\"type\":\"tile_map\",\"params\":{\"mapType\":\"Scaled Circle Markers\",\"isDesaturated\":true,\"addTooltip\":true,\"heat(
      "uiStateJSON": "{}",
      "description": "",
      "version": 1,
      "kibanaSavedObjectMeta": {
        "searchSourceJSON": "{\"index\":\"b8c6bd20-87db-11e8-8161-3b4280559eb3\",\"filter\":[],\"query\":{\"query\":\"\",\"language\":\"lucene\"}}"
      }
    }
  },
  {
    "_id": "08e28cc0-6f28-11e8-a0fb-51f0eb991705",
    "_type": "visualization",
    "_source": {
      "title": "[nginx] region maps",
      "visState": "{\"title\":\"[nginx] region maps\",\"type\":\"region_map\",\"params\":{\"legendPosition\":\"bottomright\",\"addTooltip\":true,\"colorSchema\":\"Yellow to Red\",\
      "uiStateJSON": "{\"mapZoom\":2,\"mapCenter\":[11.695272733029402,24.433593750000004]}",
      "description": "",
      "version": 1,
      "kibanaSavedObjectMeta": {
        "searchSourceJSON": "{\"index\":\"b8c6bd20-87db-11e8-8161-3b4280559eb3\",\"filter\":[],\"query\":{\"query\":\"\",\"language\":\"lucene\"}}"
      }
    }
  },
  {
    "_id": "cfbbc570-6f26-11e8-a0fb-51f0eb991705",
    "_type": "visualization",
    "_source": {
      "title": "[nginx] metric",
      "visState": "{\"title\":\"[nginx] metric\",\"type\":\"metric\",\"params\":{\"addTooltip\":true,\"addLegend\":false,\"type\":\"metric\",\"metric\":{\"percentageMode\":false,\
      "uiStateJSON": "{}",
      "description": "",
      "version": 1,
      "kibanaSavedObjectMeta": {
        "searchSourceJSON": "{\"index\":\"b8c6bd20-87db-11e8-8161-3b4280559eb3\",\"filter\":[],\"query\":{\"query\":\"\",\"language\":\"lucene\"}}"
      }
    }
  },
  {
    "_id": "c1d84360-6f2c-11e8-a0fb-51f0eb991705",
    "_type": "visualization",
    "_source": {
      "title": "[nginx] area chart",
      "visState": "{\"title\":\"[nginx] area chart\",\"type\":\"line\",\"params\":{\"type\":\"line\",\"grid\":{\"categoryLines\":false,\"style\":{\"color\":\"#eee\"}},\"categoryAx
      "uiStateJSON": "{\"vis\":{\"colors\":{\"200\":\"#6ED0E0\",\"nginx.access.response_code:200\":\"#F29191\"},\"legendOpen\":false}}",
      "description": "",
      "version": 1,
      "kibanaSavedObjectMeta": {
        "searchSourceJSON": "{\"index\":\"b8c6bd20-87db-11e8-8161-3b4280559eb3\",\"filter\":[],\"query\":{\"query\":\"\",\"language\":\"lucene\"}}"
      }
    }
  },
```

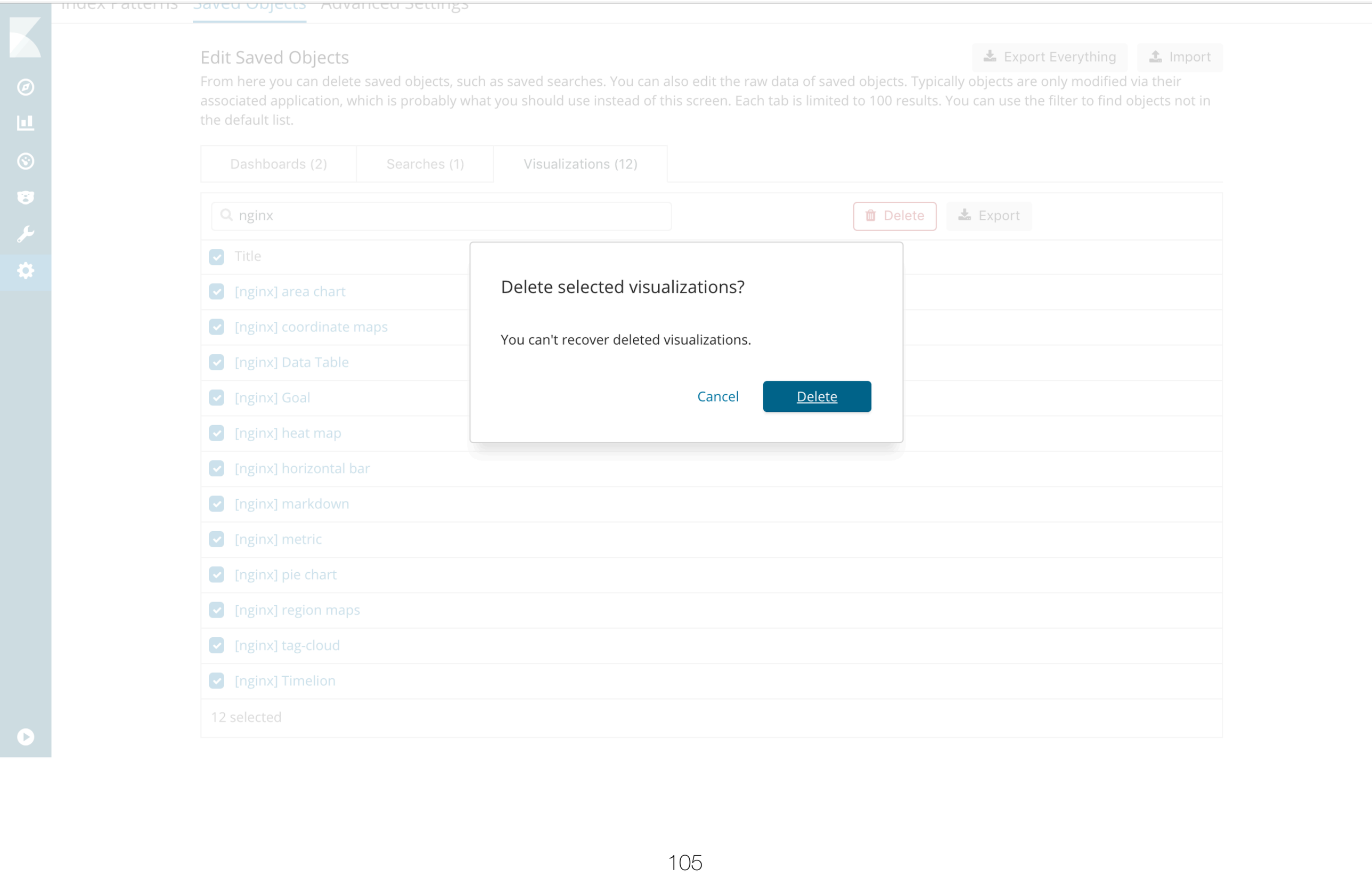
Visualization export

visualization을 백업 받으면 위와 같은 json 파일이 생기는데, 각 visualization이 어떻게 구성되었는지에 대한 정보를 담고 있다

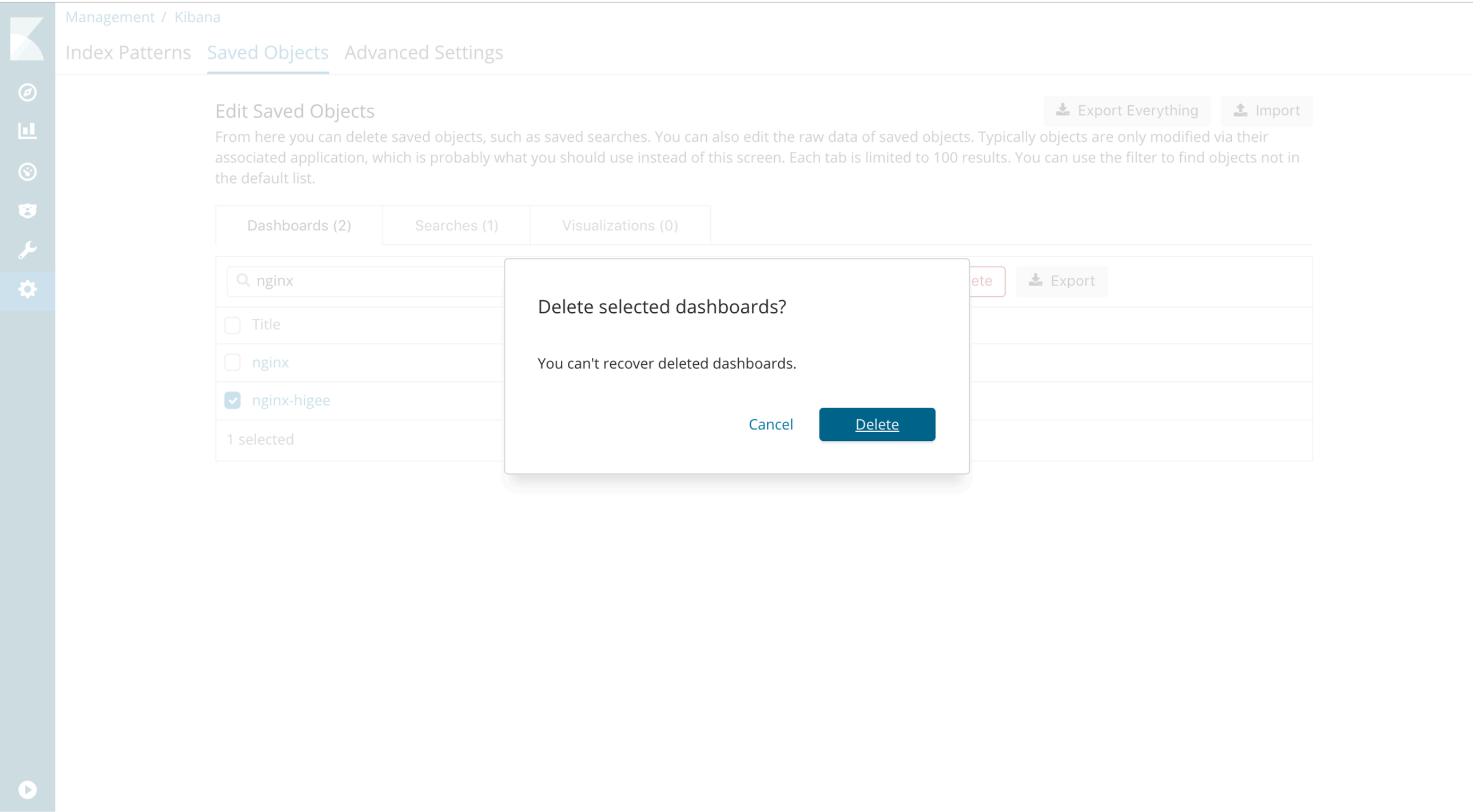
즉, dashboard UI를 온전히 백업 받으려면 dashboard와 visualization을 모두 백업 받아야 한다

Dashboard/Visualization import

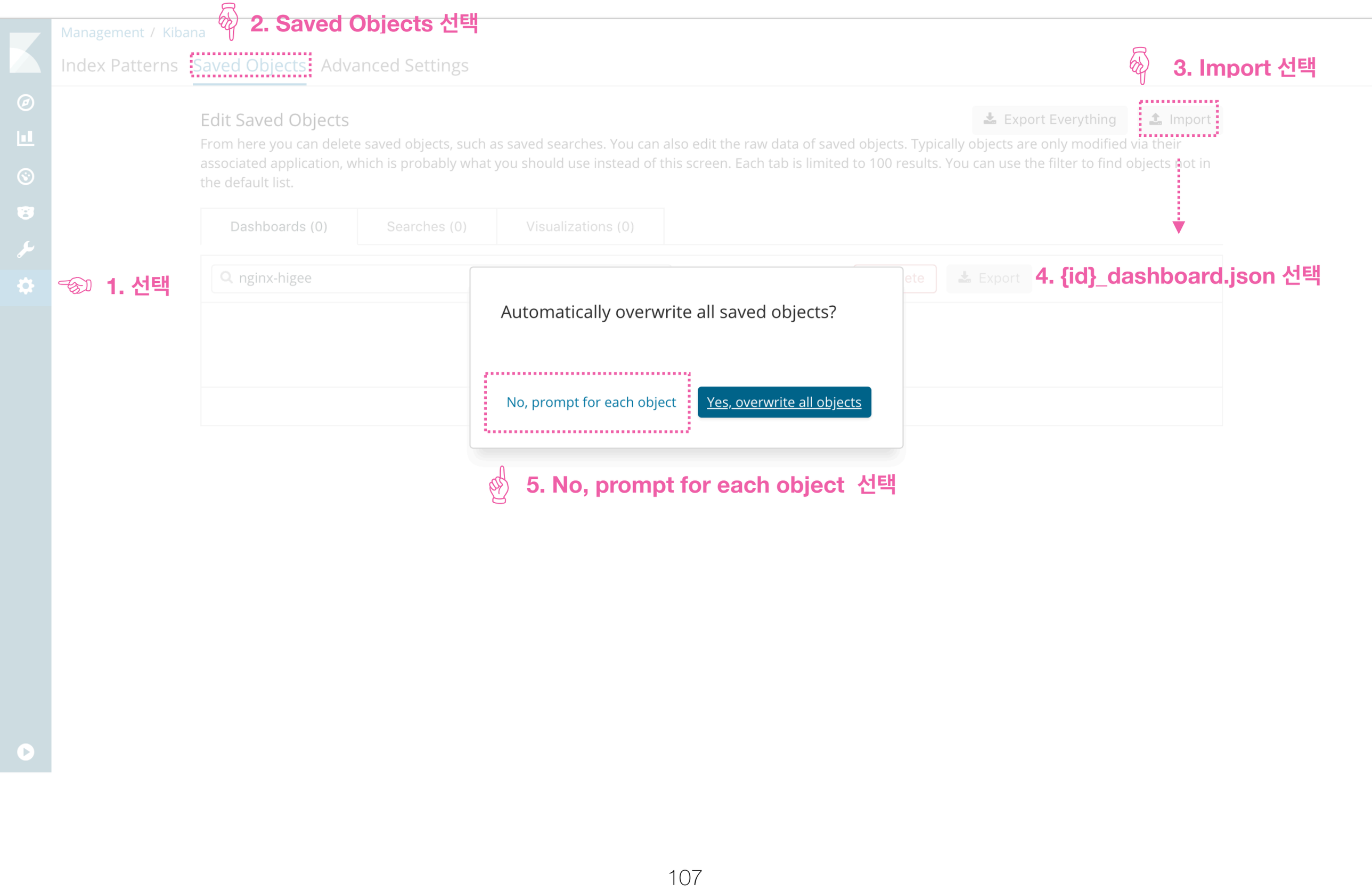
visualization 삭제



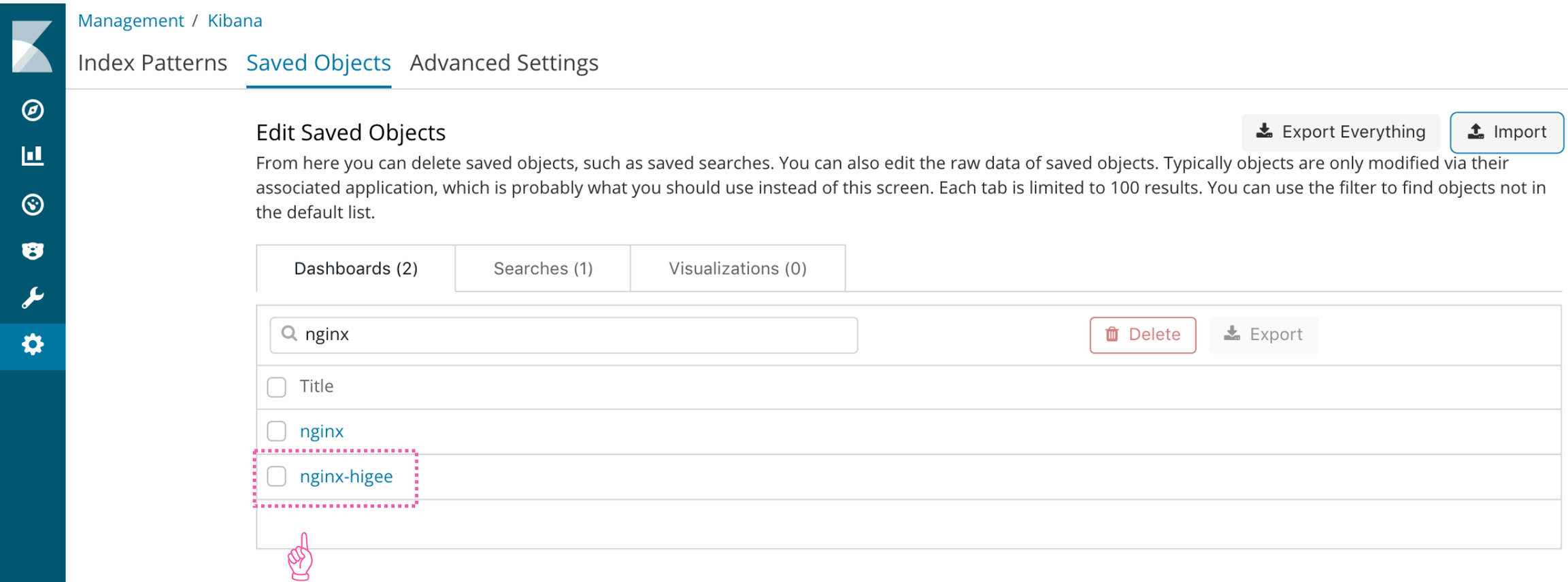
dashboard 삭제



Dashboard import

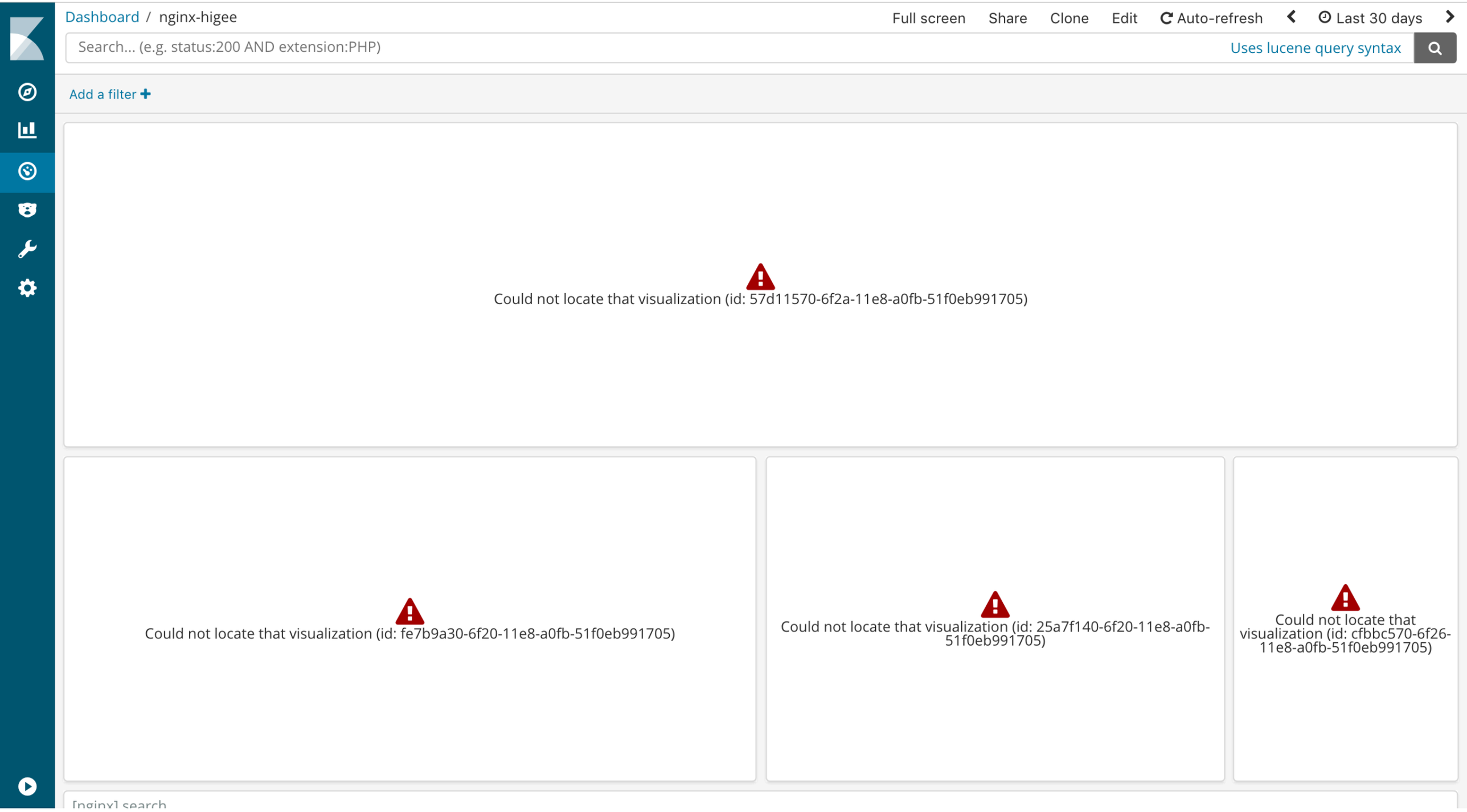


Dashboard import

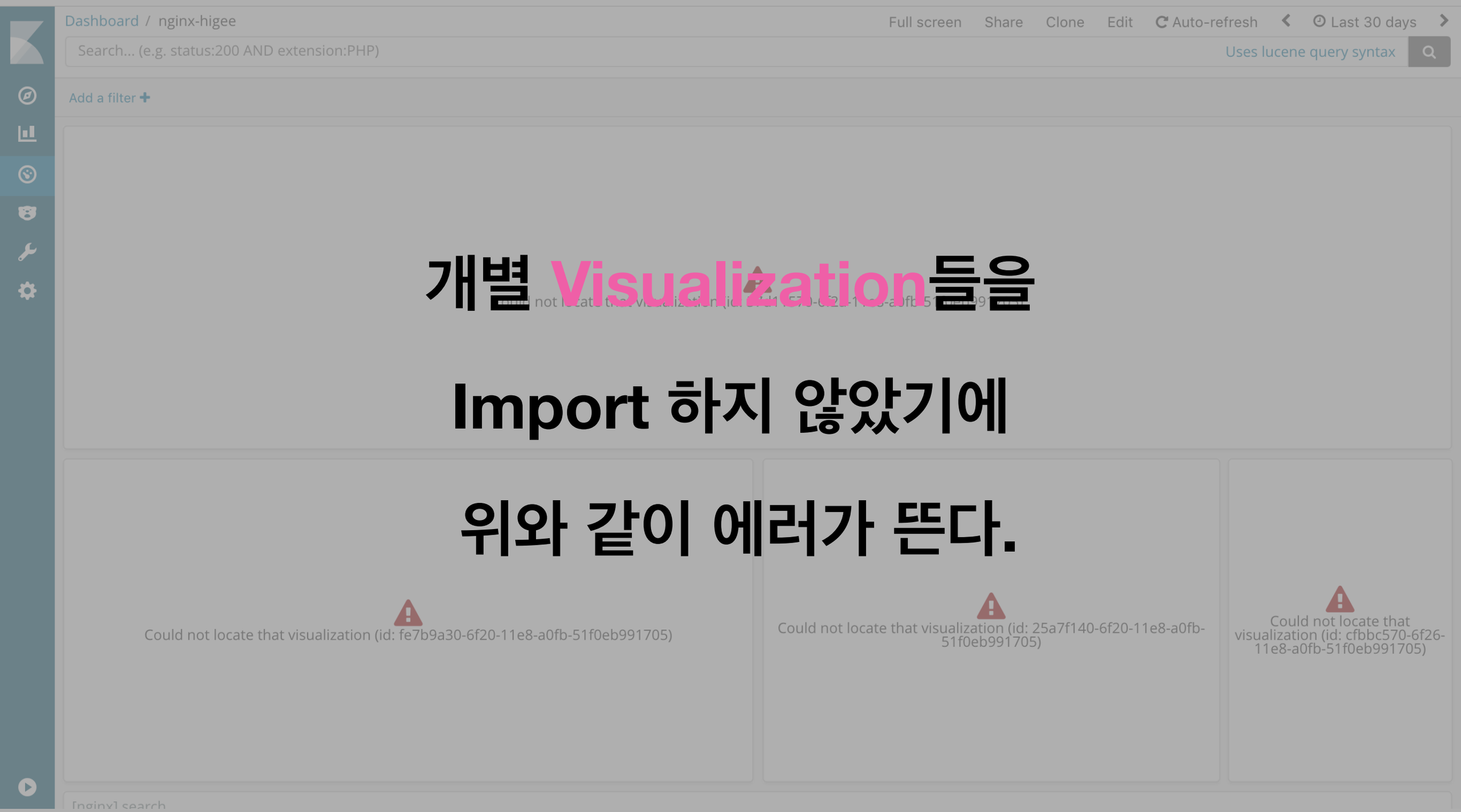


한 번 지웠던 nginx-higee가 제대로 Import 된 걸 확인할 수 있다

Import한 Dashboard에 가보면



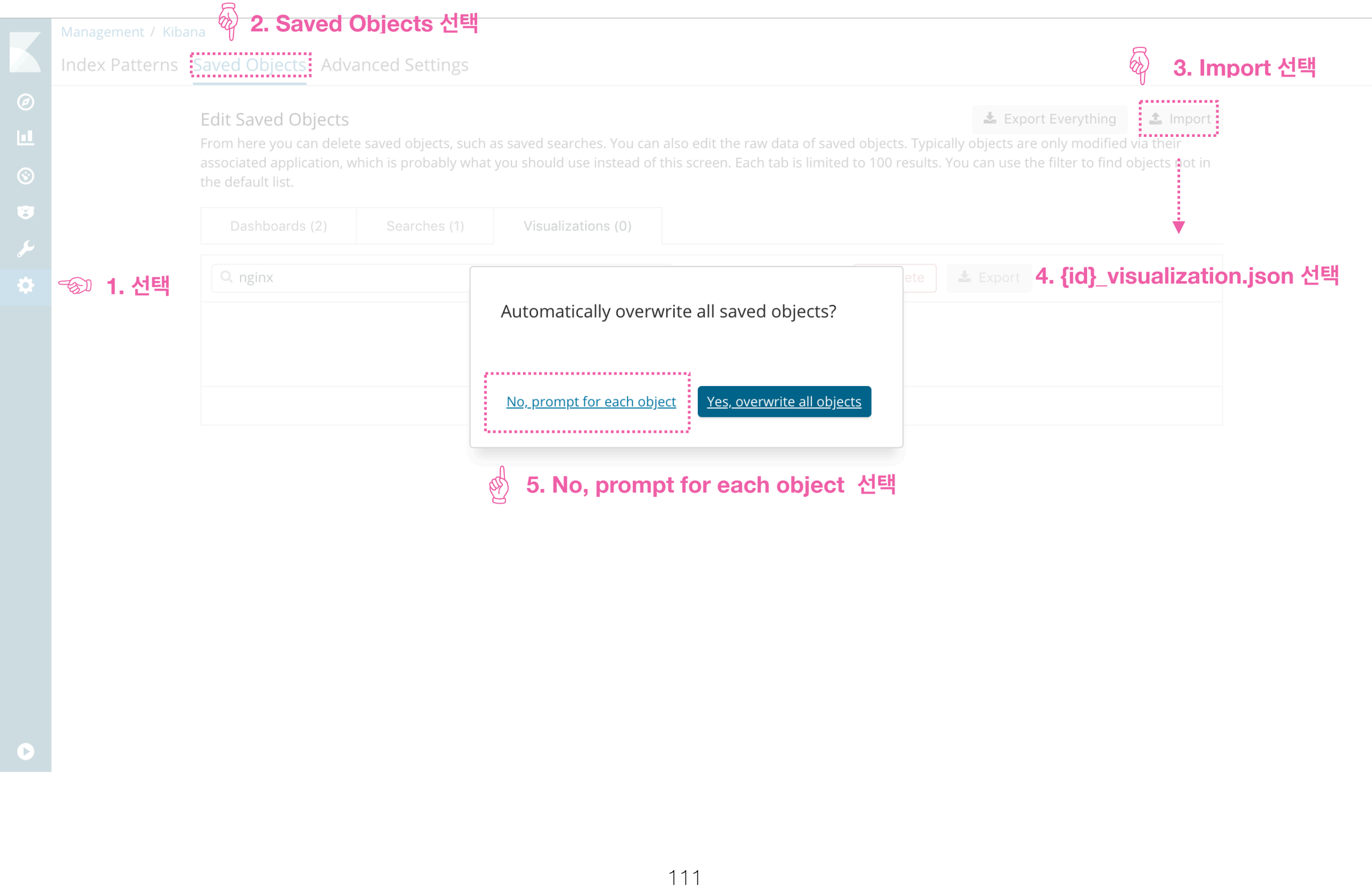
Import한 Dashboard에 가보면



개별 Visualization들을 Import 하지 않았기에

위와 같이 에러가 뜬다.

Visualization import



Import한 Dashboard에 다시 가보면

kibana

Discover
Visualize
Dashboard
Timelion
Dev Tools
Management

Collapse

Dashboard / nginx-higee Full screen Share Clone Edit Auto-refresh June 1st 2018, 00:00:00.000 to August 12th 2018, 23:59:59.999

Search... (e.g. status:200 AND extension:PHP) Uses lucene query syntax

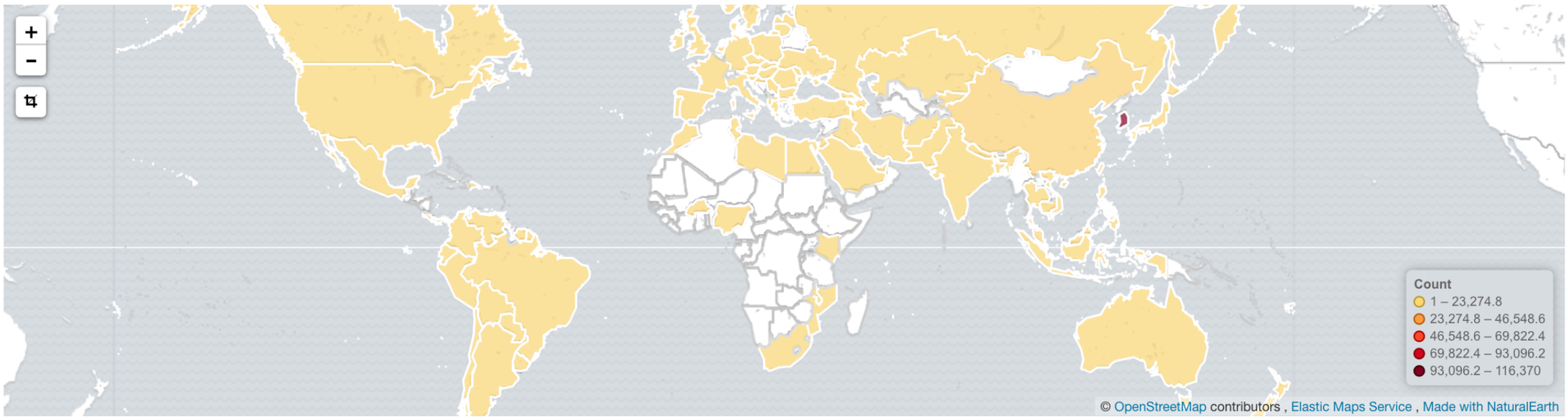
Add a filter +

[nginx] markdown

Nginx Access.Log Dashboard

```
66.249.82.131 - - [13/Jun/2018:17:01:02 +0000] "GET /ui/favicons/favicon-16x16.png HTTP/1.1" 304 0 "http://kibana.higee.co/app/kibana" "Mozilla/5.0 (Macintosh; Intel Mac OS X 10_12_3) AppleWebK
118.221.38.242 - - [13/Jun/2018:17:01:14 +0000] "POST /api/console/proxy?path=_aliases&method=GET HTTP/1.1" 200 107 "http://kibana.higee.co/app/kibana" "Mozilla/5.0 (Macintosh; Intel Mac OS X 1
118.221.38.242 - - [13/Jun/2018:17:01:14 +0000] "POST /api/console/proxy?path=_mapping&method=GET HTTP/1.1" 200 974 "http://kibana.higee.co/app/kibana" "Mozilla/5.0 (Macintosh; Intel Mac OS X 1
66.249.82.131 - - [13/Jun/2018:17:01:16 +0000] "GET /ui/favicons/favicon-32x32.png HTTP/1.1" 304 0 "http://kibana.higee.co/app/kibana" "Mozilla/5.0 (Macintosh; Intel Mac OS X 10_12_3) AppleWebK
66.249.82.129 - - [13/Jun/2018:17:01:17 +0000] "GET /ui/favicons/favicon-16x16.png HTTP/1.1" 304 0 "http://kibana.higee.co/app/kibana" "Mozilla/5.0 (Macintosh; Intel Mac OS X 10_12_3) AppleWebK
```

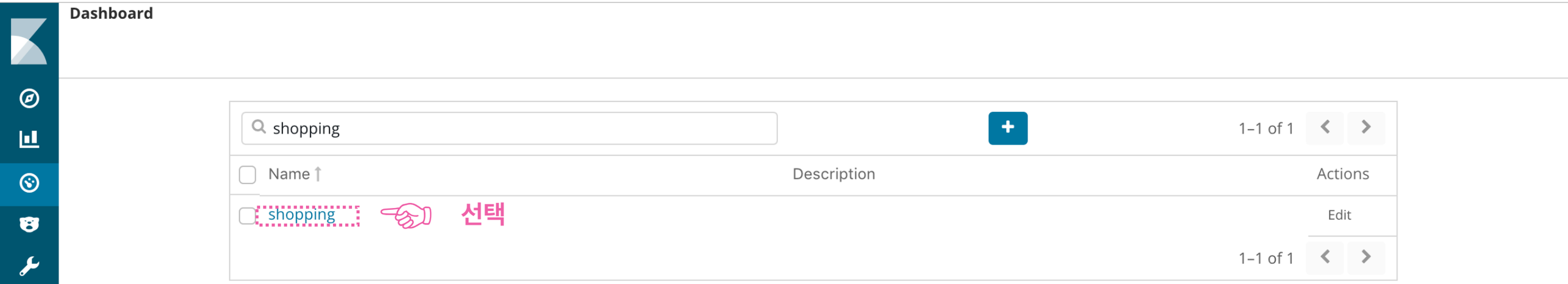
[nginx] region maps



Filtering by Field ♕

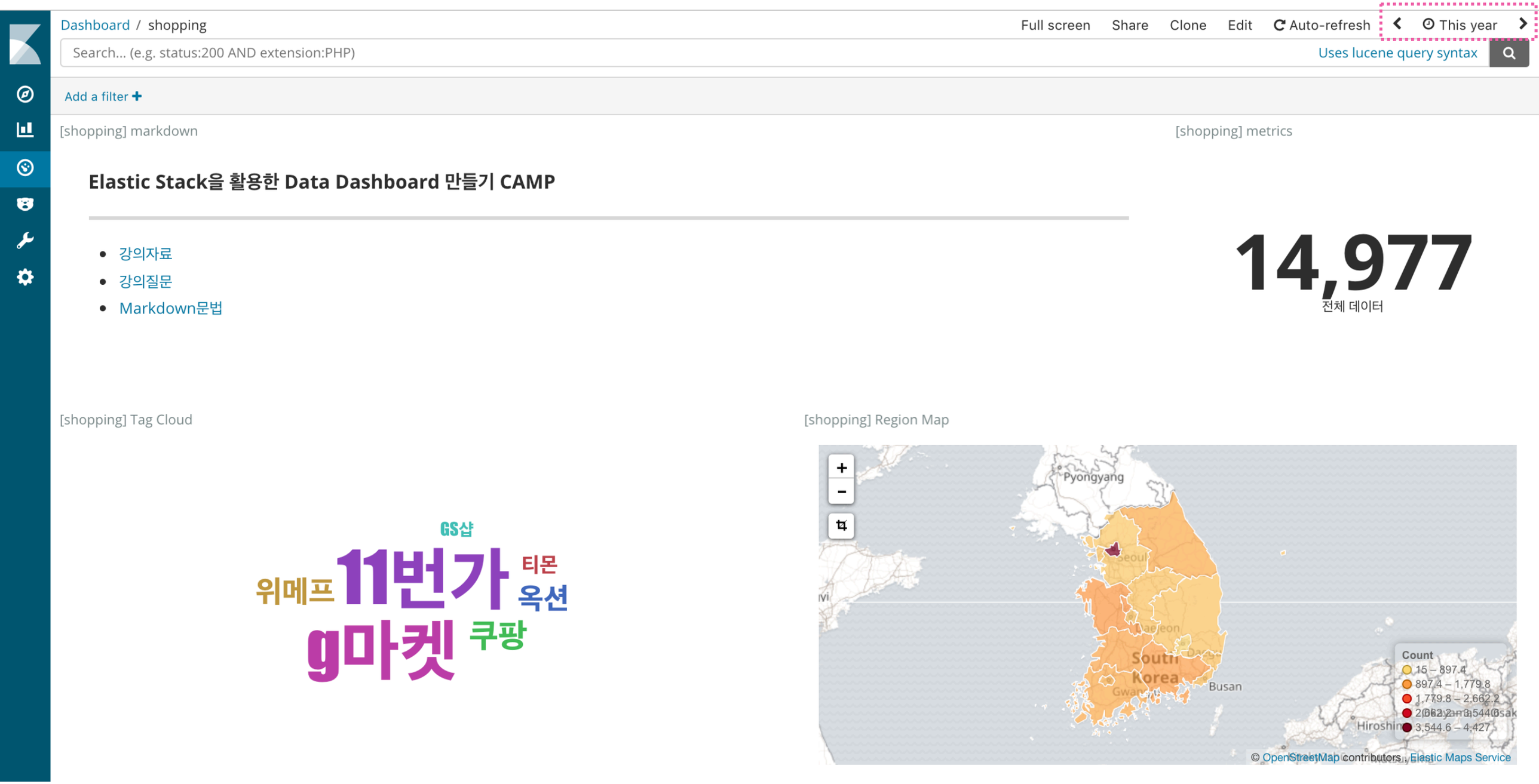
Dashboard를 만들었는데 원하는 조건의 데이터만 보고 싶다면?

Dashboard 선택



Dashboard를 확인하자

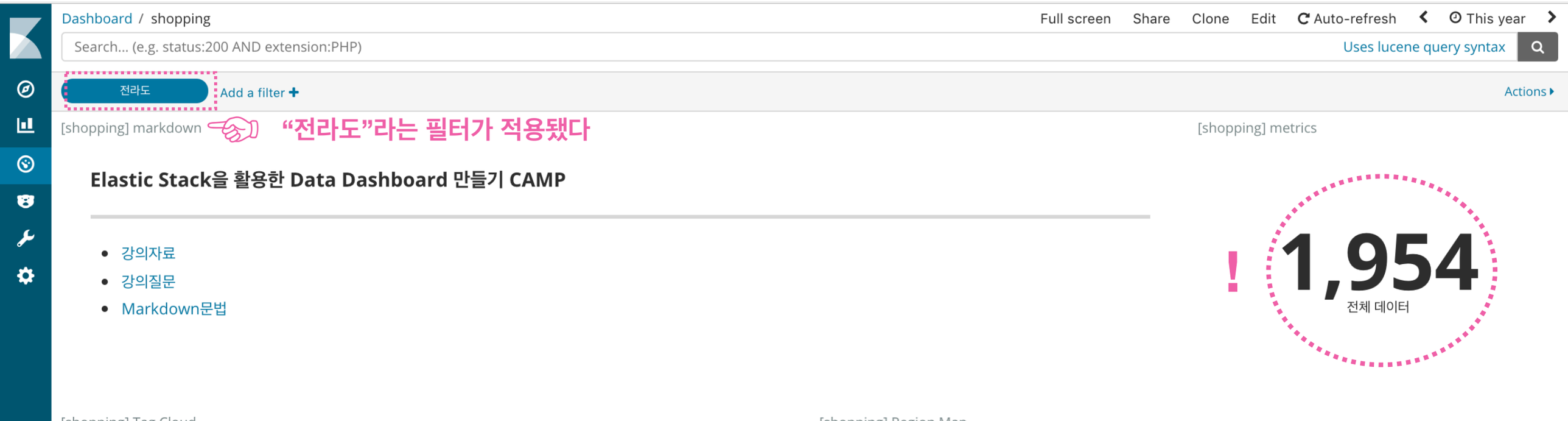
Time Picker

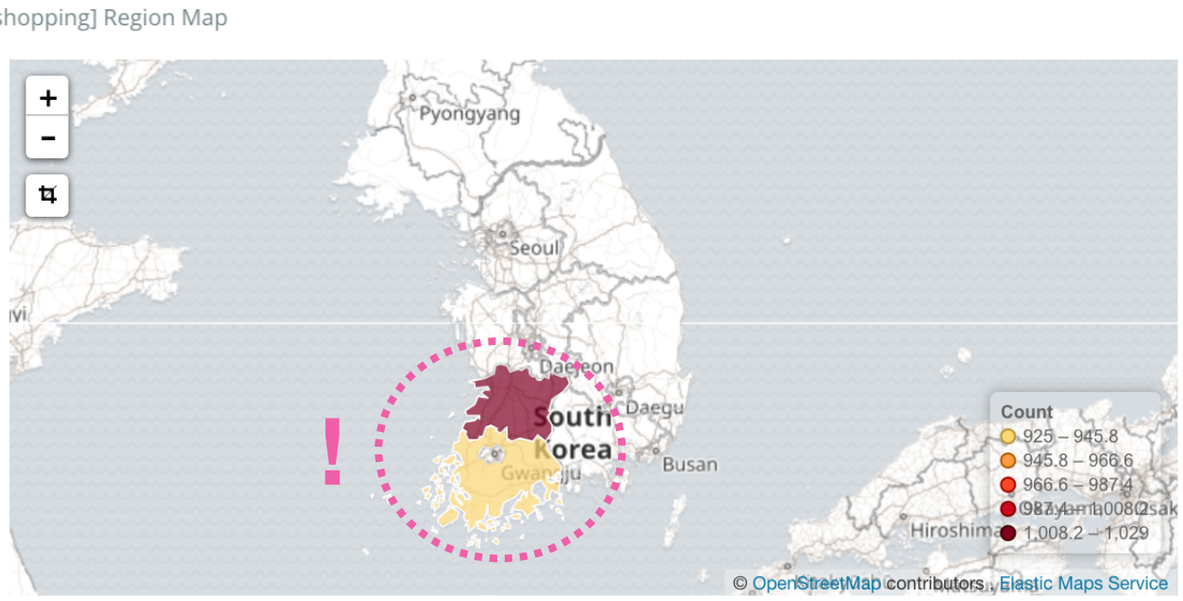


전체 Documents 중에서 **Time Picker 구간에 속한** Documents만 보여준다.

만약에 다른 조건을 추가하고 싶다면? 예를 들어, “**전라도**” 데이터만 보고 싶으면 어떻게 할까?

원하는 조건의 데이터만 조회하기 위해 필터를 적용했다



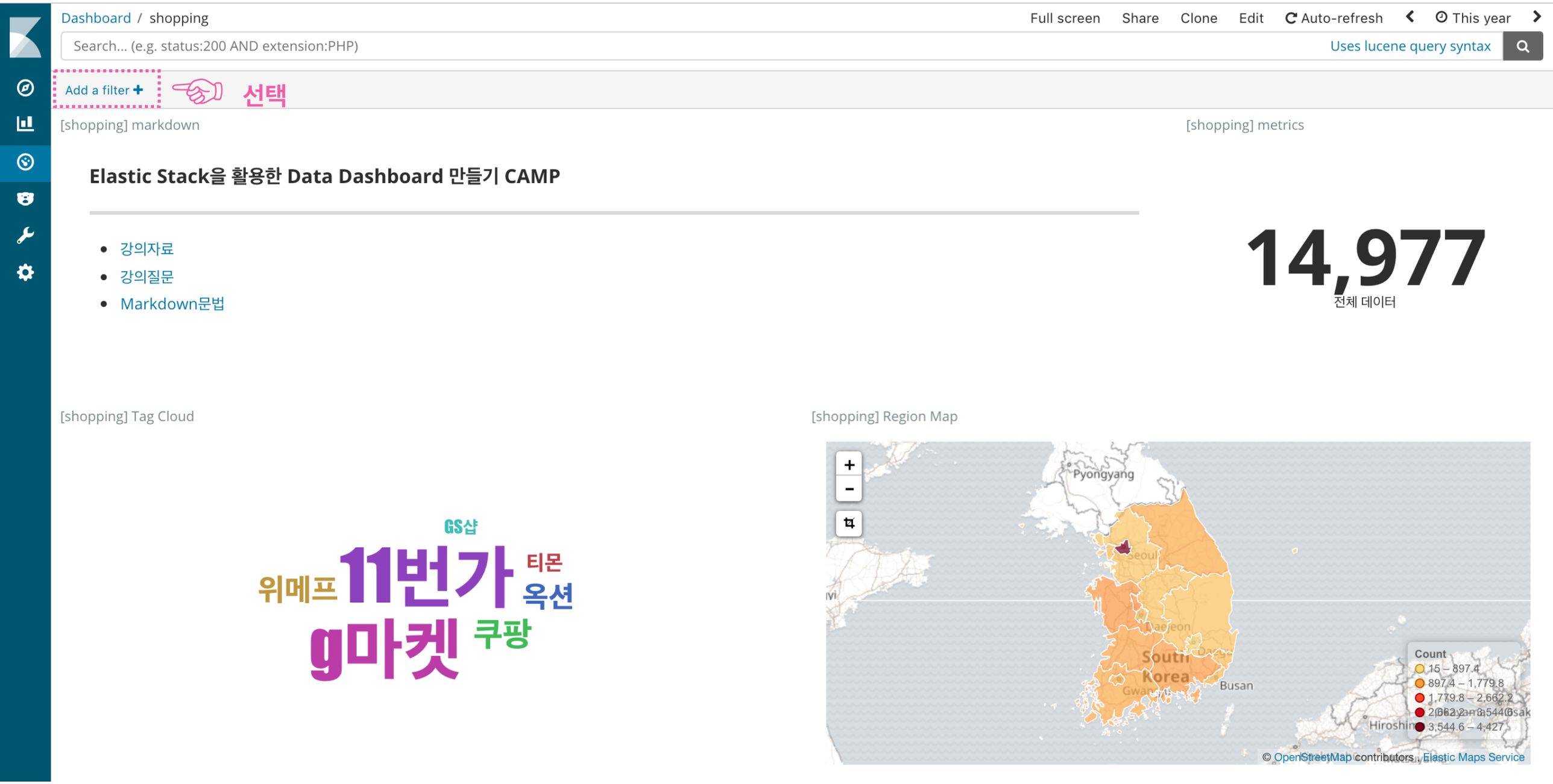


Filter를 이용하면 **특정 조건을 만족**하는

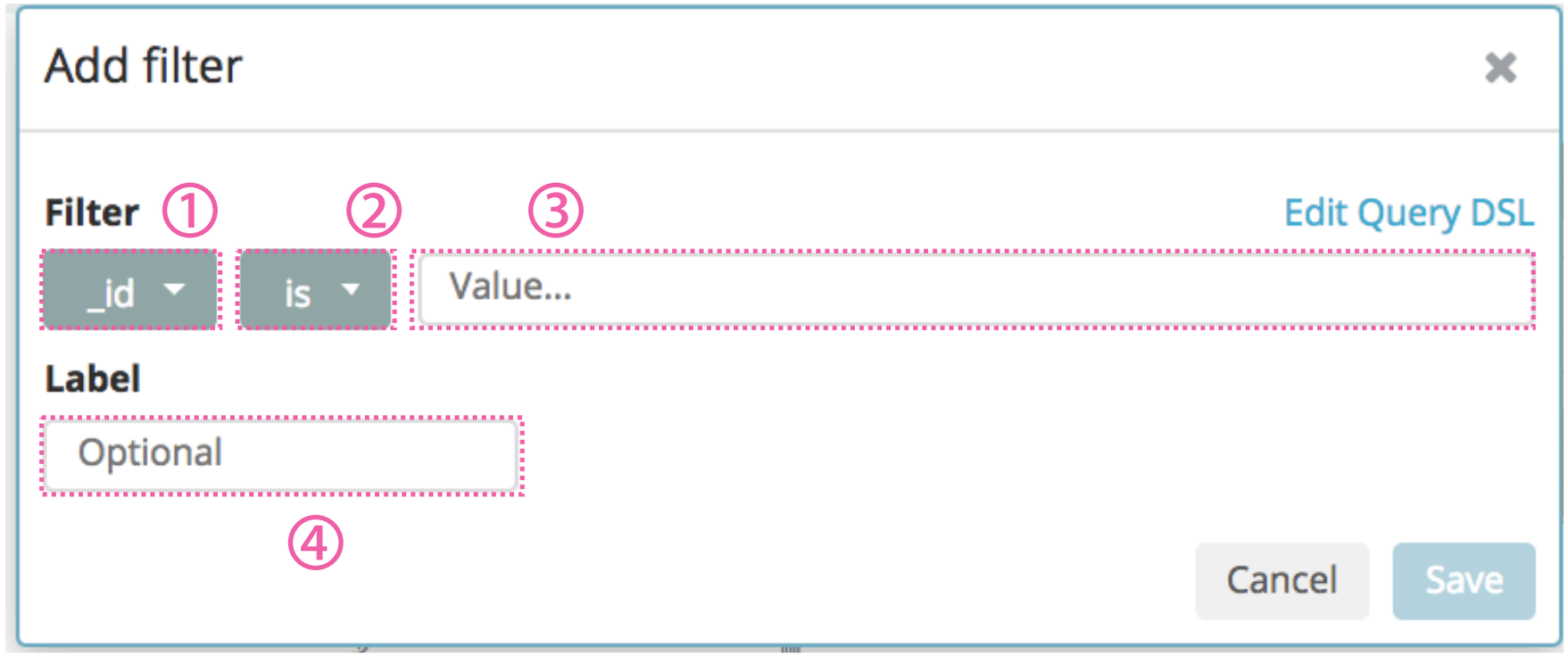
데이터만 선별하여 Dashboard에 시각화할 수 있다.

그렇다면 어떻게 사용할까?

Filter를 실행하자



Filter의 사용법을 익히자



① Filter 적용할 Field 선택

② 적용할 Operator 선택 (다음 페이지 참조)

③ Filter에 적용하려는 Value 입력

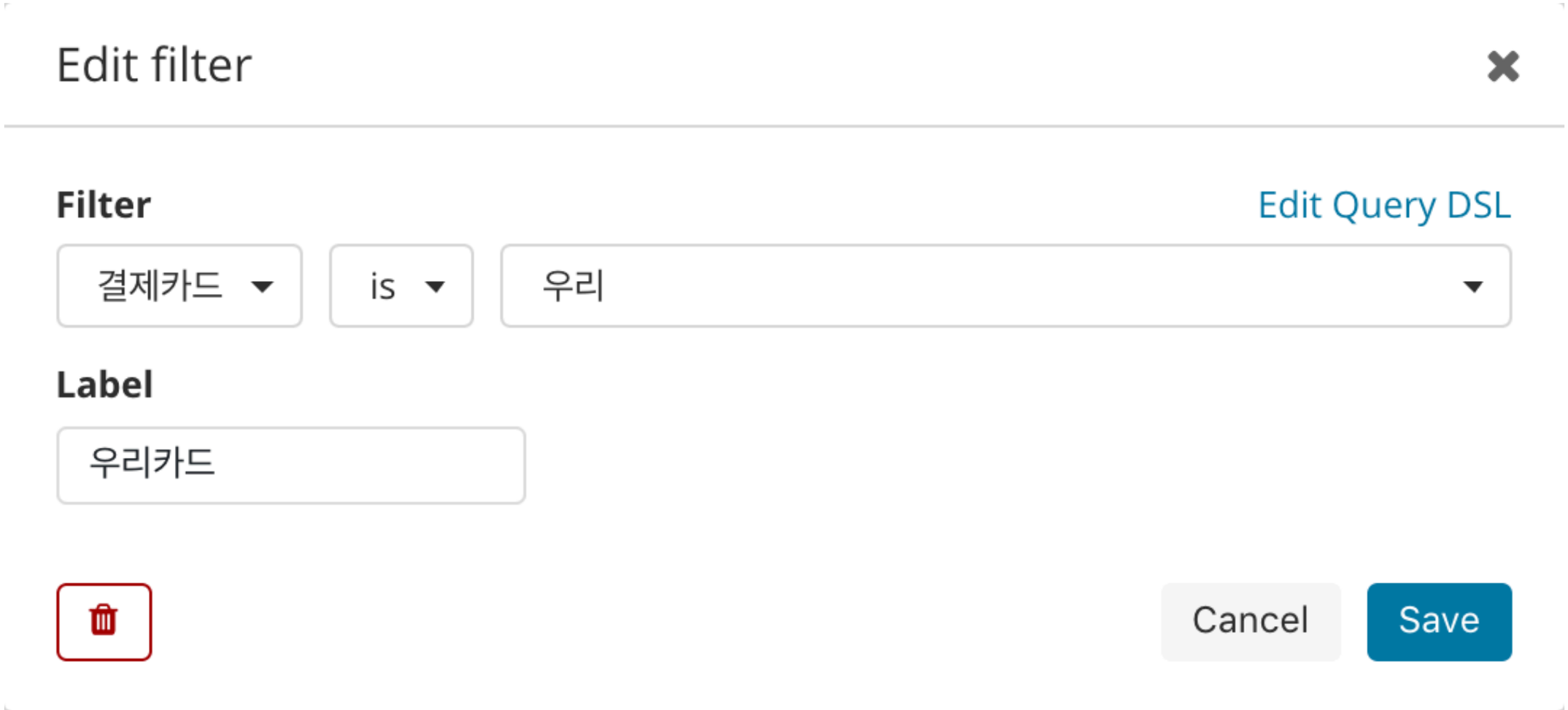
④ (여러 Filter 구분하기 위한) 이름 입력

Operator 설명

Operator	역할
is	Field의 Value가 입력한 값과 일치하는 Documents 선택
is not	Field의 Value가 입력한 값과 일치하지 않는 Documents 선택
is one of	Field의 Value가 입력한 값 중에 존재하는 Documents 선택
is not one of	Field의 Value가 입력한 값 중에 존재하지 않는 Documents 선택
exists	Field가 적어도 한 개의 non-null 값을 가지는 Documents 선택
does not exist	Field가 존재하지 않거나 null 값만 가지는 Documents 선택
is between	Field의 Value가 입력한 값 사이에 존재하는 Documents 검색
is not between	Field의 Value가 입력한 값 사이에 존재하지 않는 Documents 검색

실제로 Filter를 적용해보자

Operator - is


Edit filter
Filter
Edit Query DSL
결제카드
is
우리
Label
우리카드
Cancel
Save

Operator - is

Search... (e.g. status:200 AND extension:PHP) Uses lucene query syntax

우리카드 Add a filter + Actions

[shopping] markdown

Elastic Stack을 활용한 Data Dashboard 만들기 CAMP

- 강의자료
- 강의질문
- Markdown문법

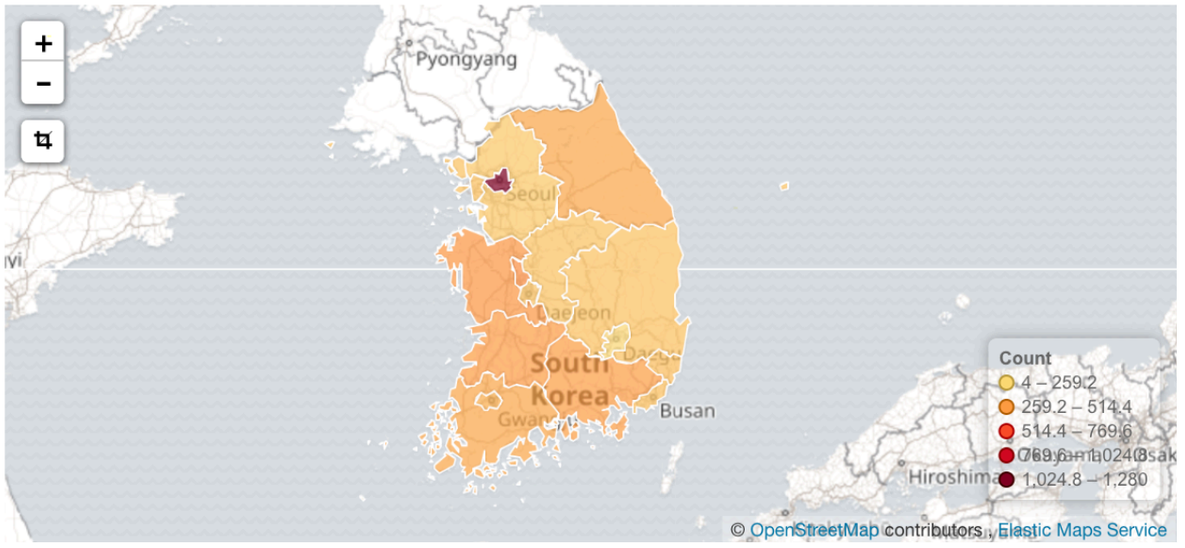
[shopping] metrics

4,504
전체 데이터

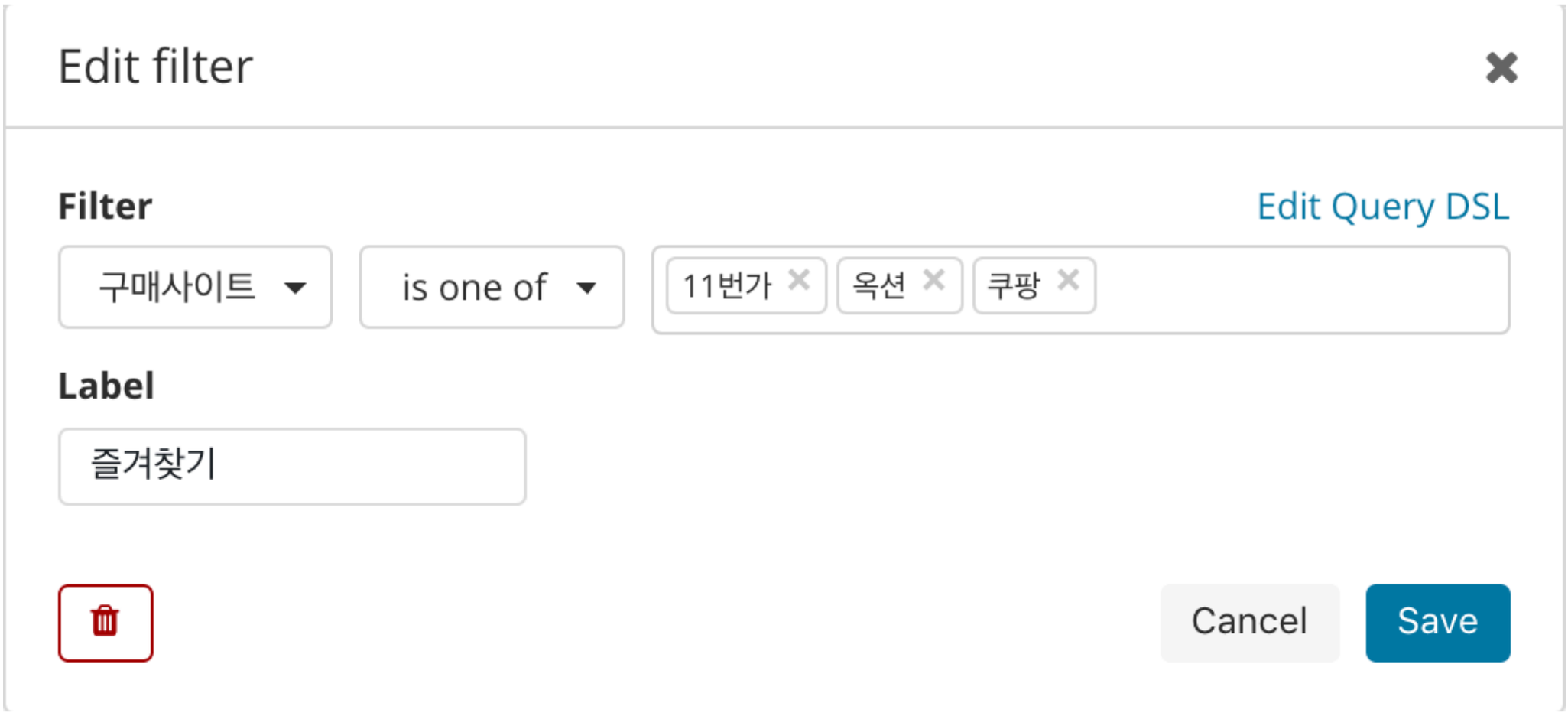
[shopping] Tag Cloud

위메프 11번가 티몬 옥션 g마켓 쿠팡 GS샵

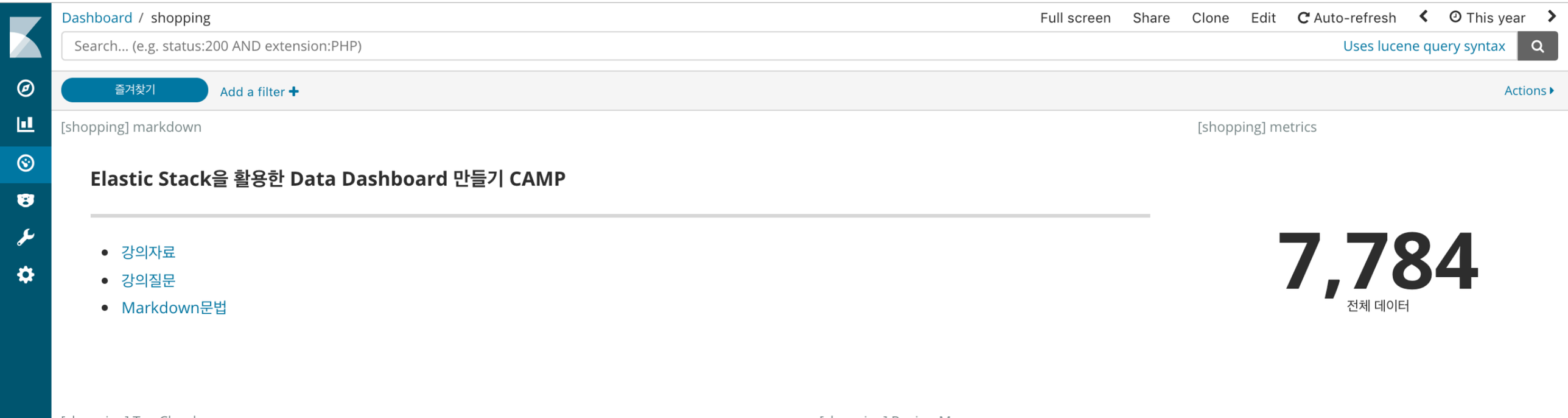
[shopping] Region Map



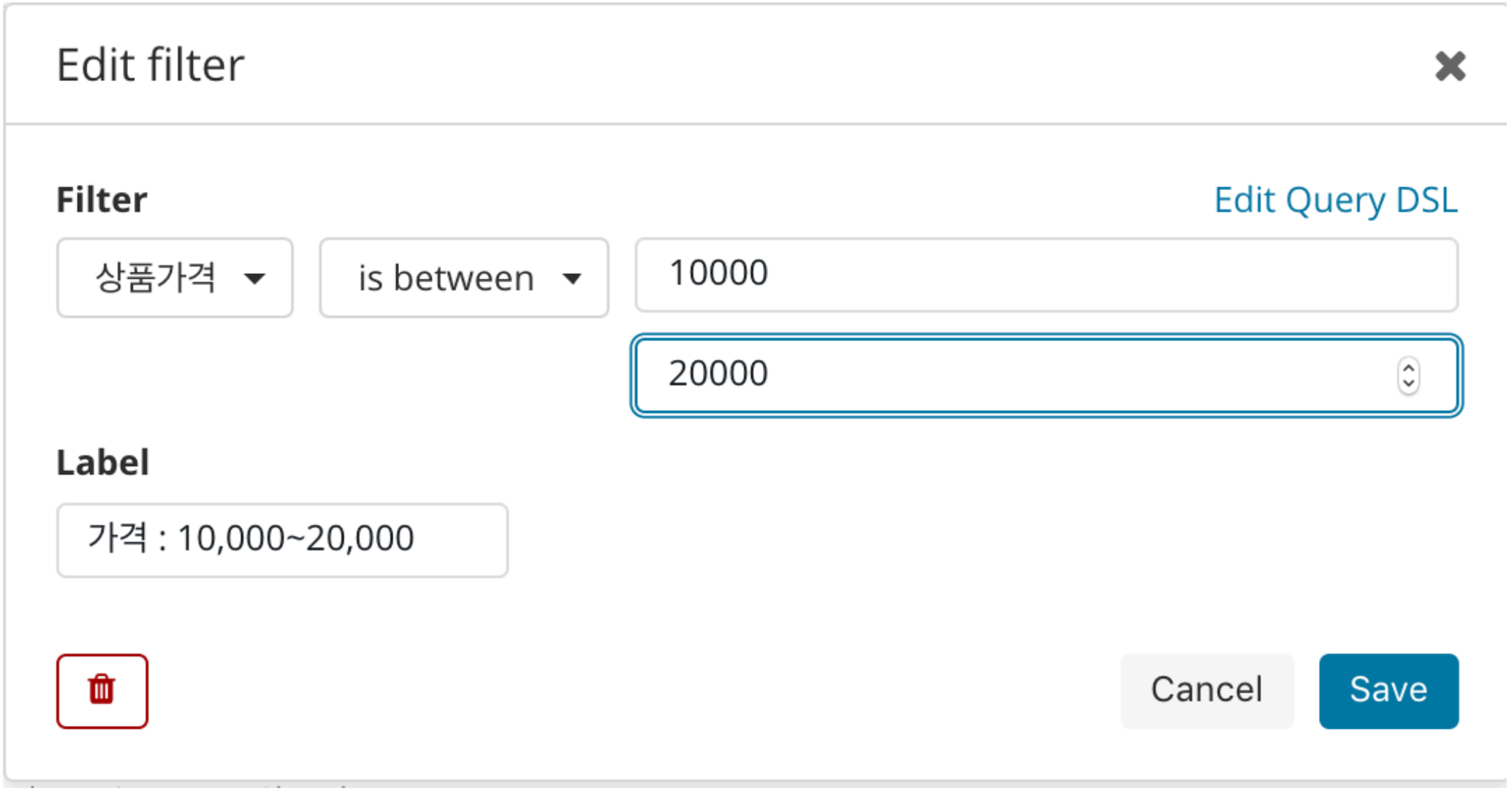
Operator - is one of



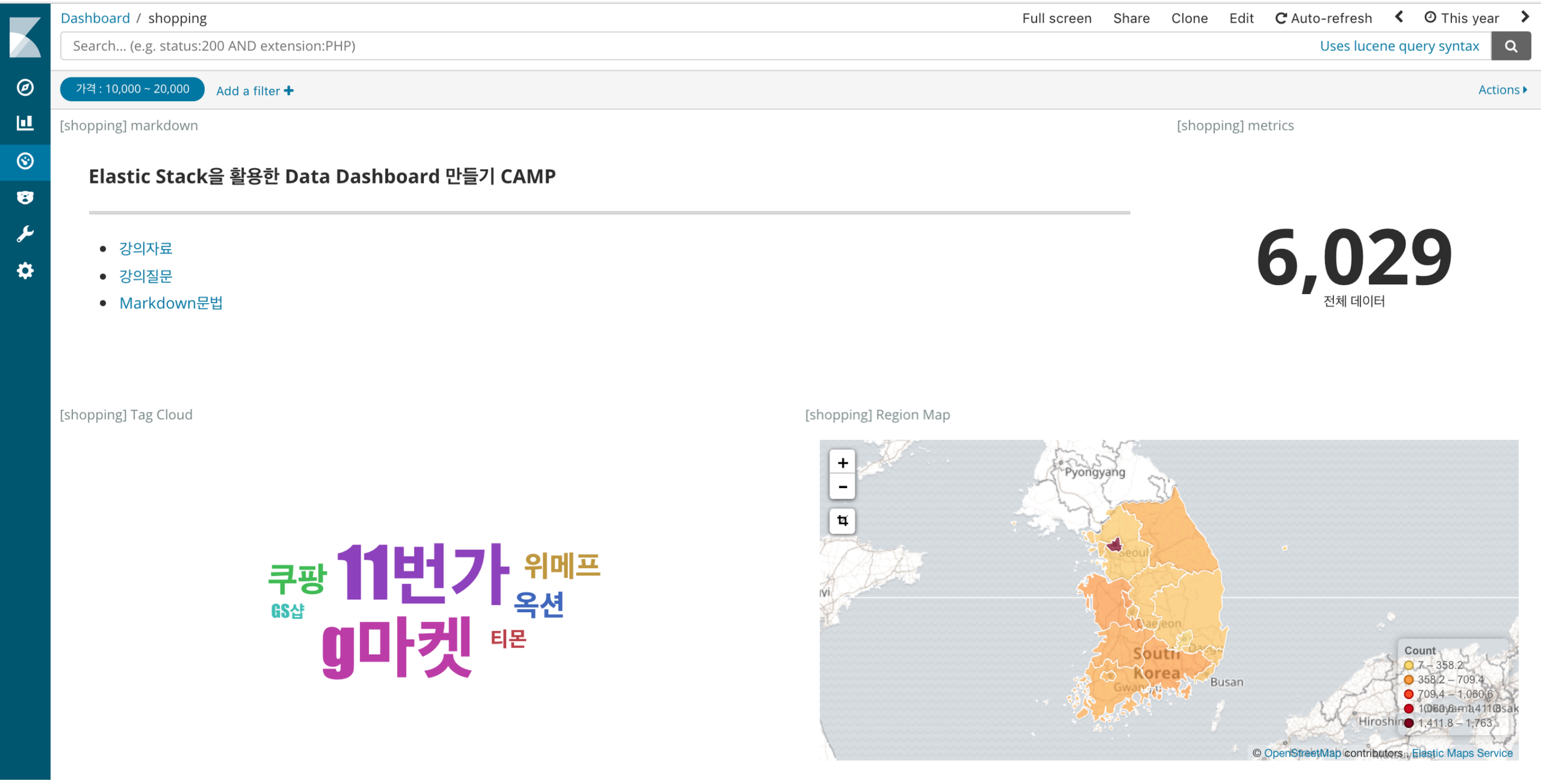
Operator - is one of



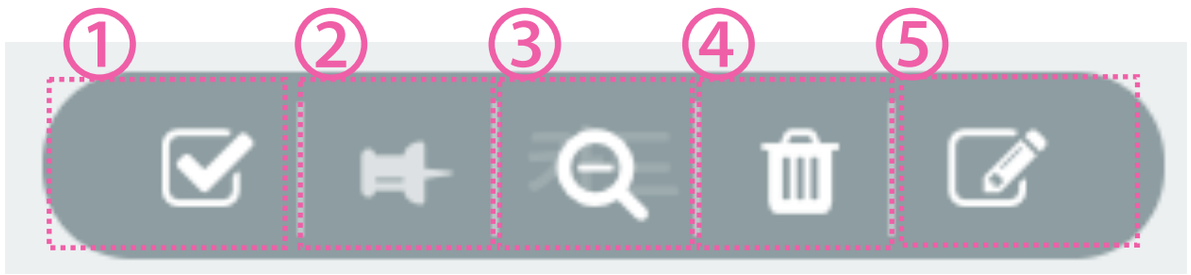
Operator - is between



Operator - is between



필터에 마우스오버하면...



안내

① 필터 적용 <=> 필터 적용 해제

② 필터 고정 (Discover, Visualize, Dashboard)

③ 필터 효과 적용 <=> 필터 효과 반대 적용

④ 필터 삭제

⑤ 필터 수정

예제4 - 아래와 같은 Filter를 Dashboard에 적용해보자

Dashboard : nginx-*

Time Range : 2018년 6월 1일 ~ 2018년 8월 26일

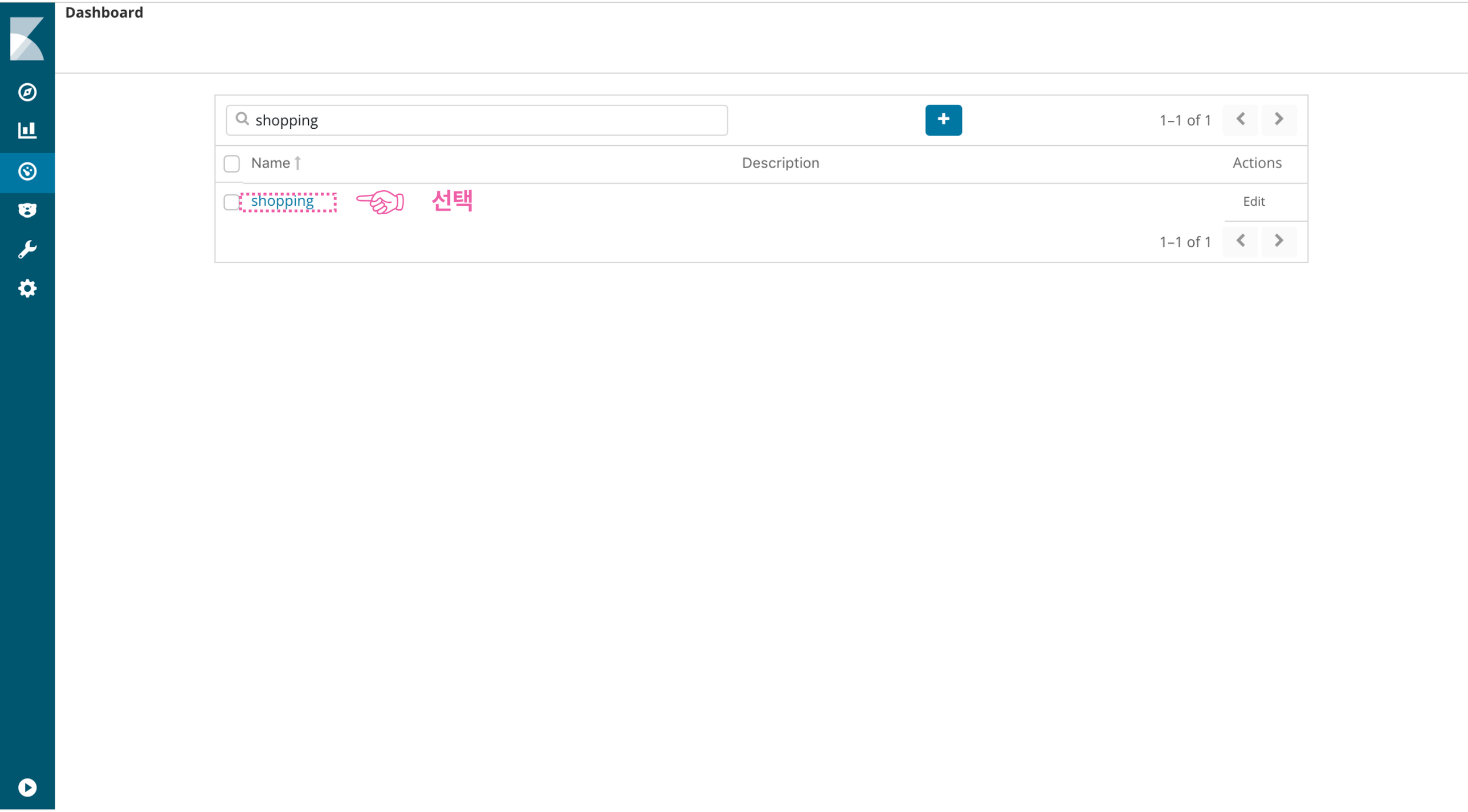
문제	operator
nginx.access.response_code가 200인 Doc 필터링	is
nginx.access.method가 GET 또는 POST인 Doc 필터링	is one of
nginx.access.geoip.region_name가 non-null값만 가지는 Doc 필터링	exists
nginx.access.geoip.city_name이 Seoul이면서 nginx.access.user_agent.name이 Chrome인 Doc 필터링	is
nginx.access.geoip.city_name이 Seoul이거나 nginx.access.user_agent.name이 Chrome인 Doc 필터링	?
요일_local이 SUNDAY인 Doc 필터링	is
nginx.access.geoip.country_name 가 “Republic of”로 시작하는 Doc 필터링	?
nginx.access.geoip.continent_code가 “AS”와 유사한 Doc 필터링	?

Lucene Query ♕

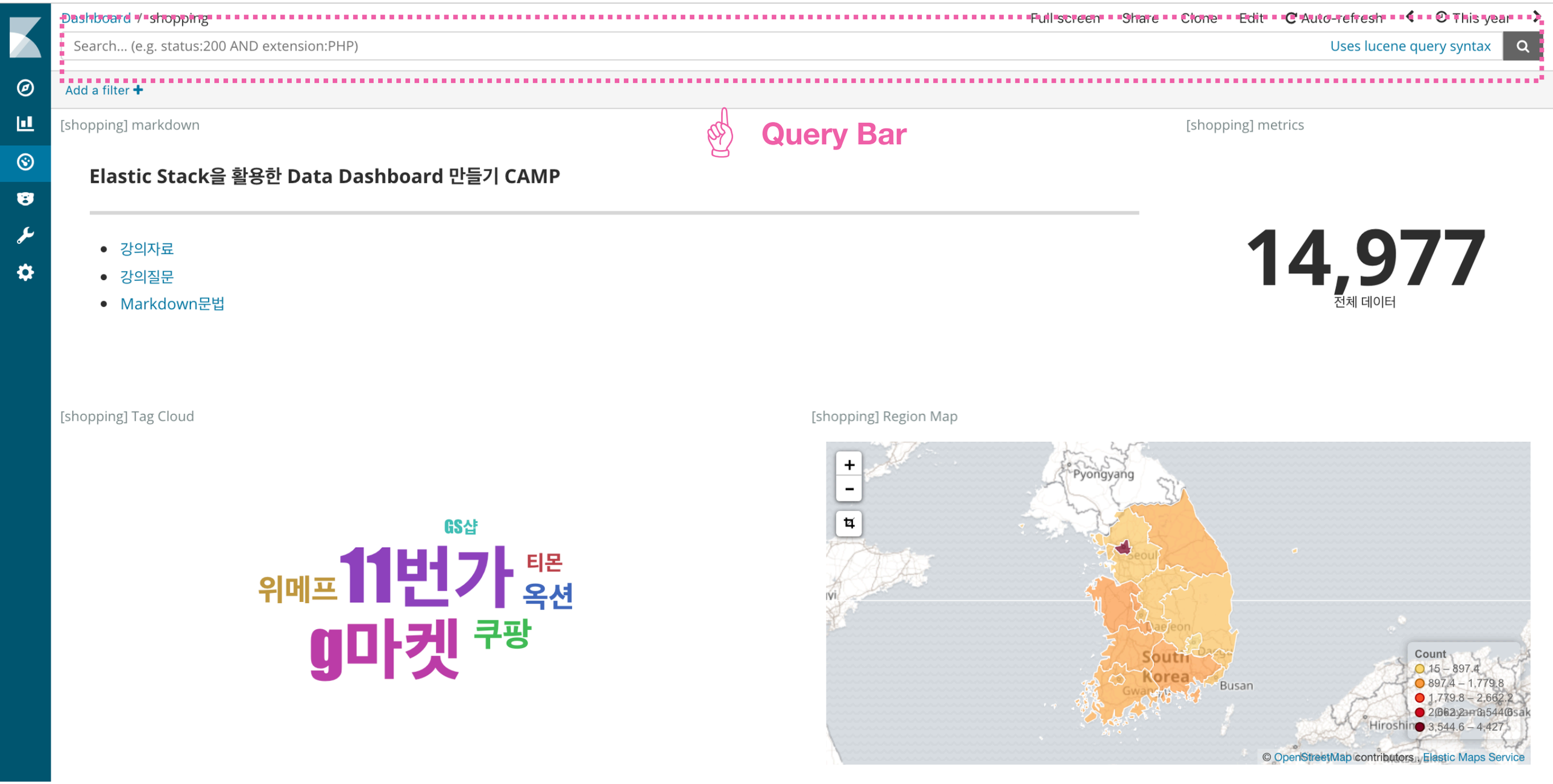
Filter는 사용하기 간단하나 기능이 제한적이다

그렇다면 다른 방법이 더 있을까?

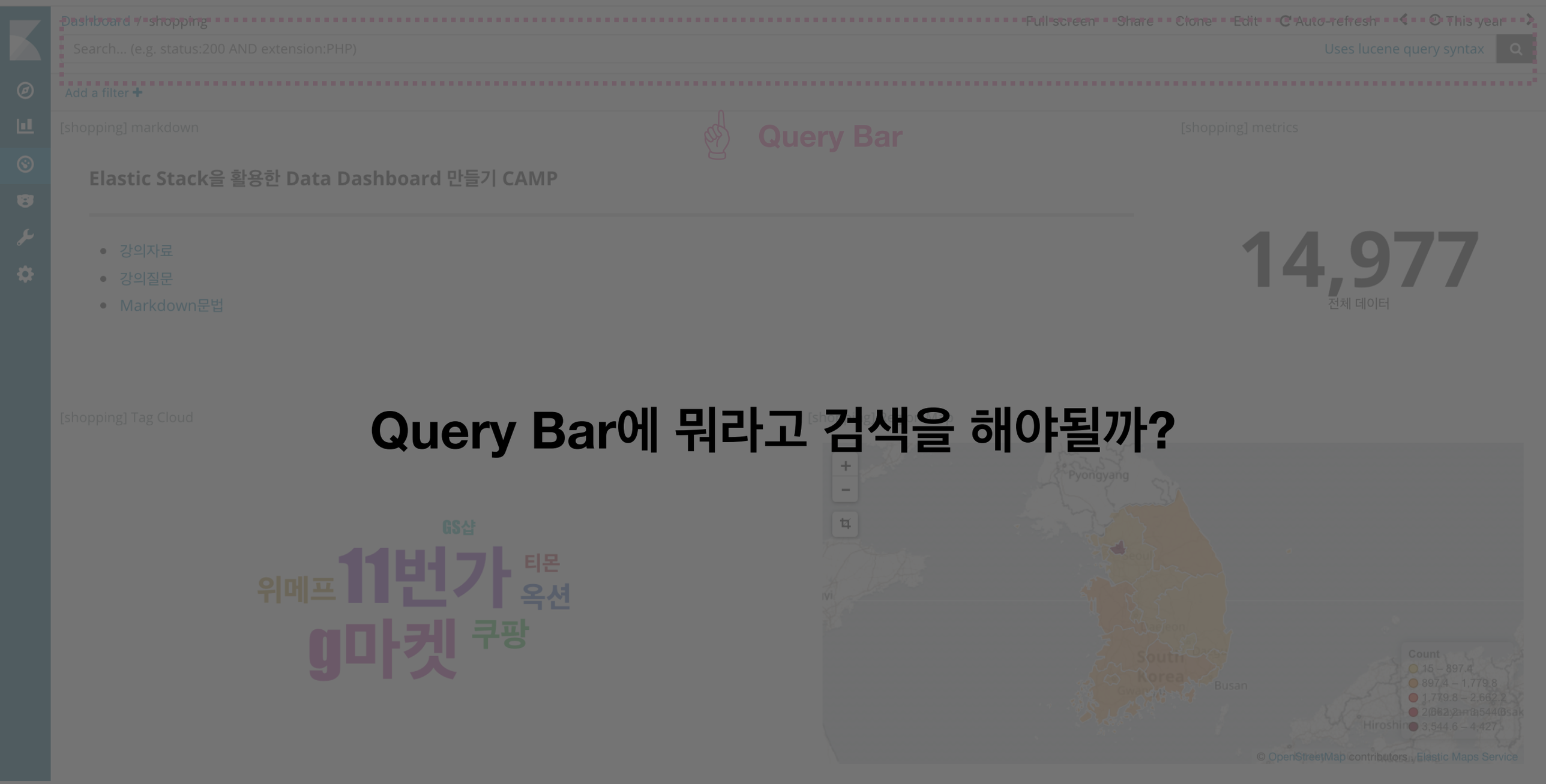
우선 Dashboard를 열자



Query Bar를 확인하자



Query Bar를 확인하자

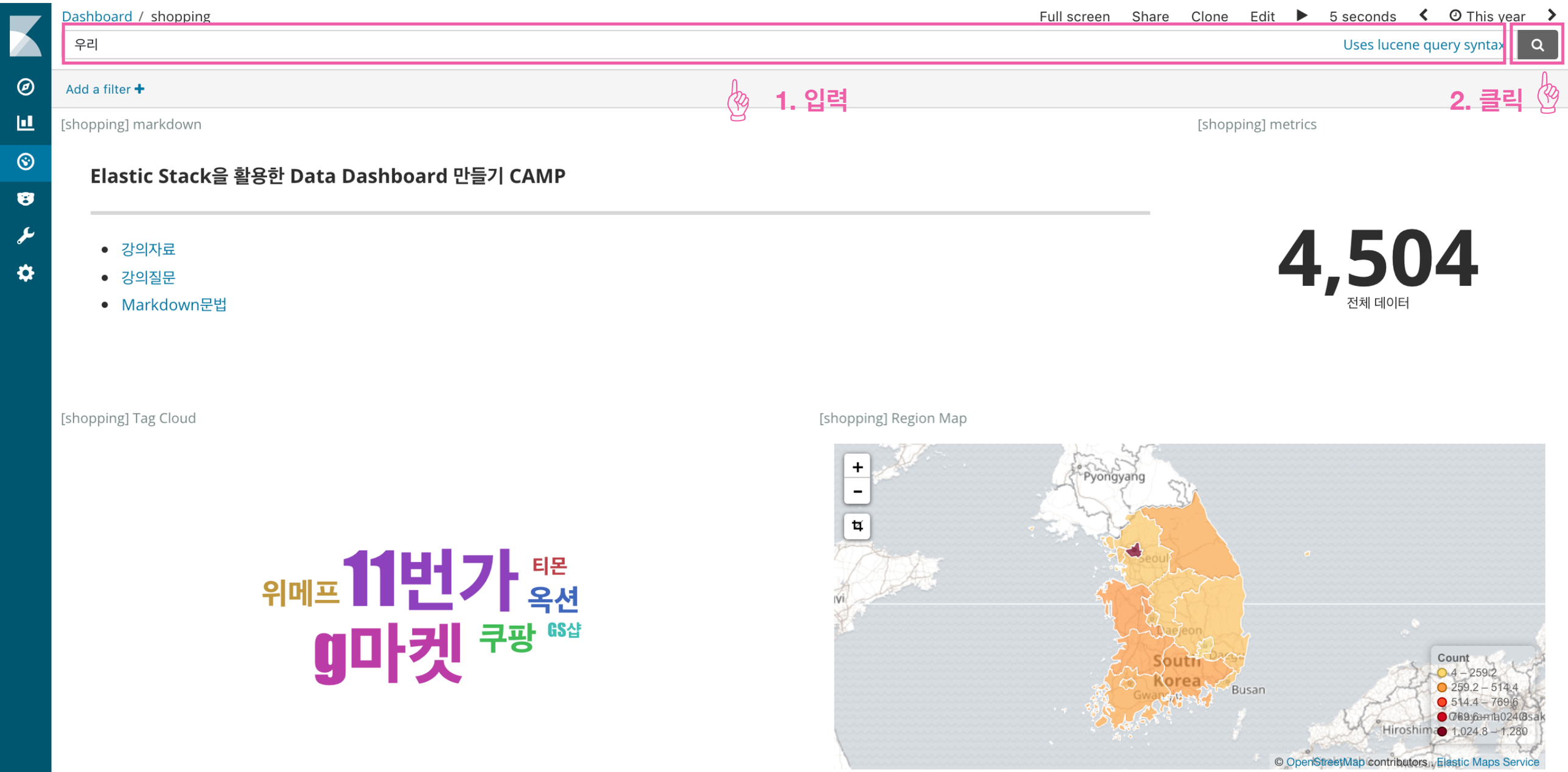


Query Bar에 뭐라고 검색을 해야될까?

Lucene Query의 사용법을 익히자

종류	기능	예시
Keyword 검색	Field에 상관없이 검색어와 일치하는 Doc 검색	여성
Field Match 검색	특정 Field 값이 검색어와 일치하는 Doc 검색	고객성별:여성
Exact Match 검색	특정 Field 값이 검색어와 정확히 일치하는 Doc 검색	배송메모: "상품 이상"
Exists 검색	특정 Field가 non-null value를 가진 Doc 검색	_exists_:구매사이트
Term 검색	특정 Field 값이 검색어 중 하나라도 일치하는 Doc 검색	상품분류: ("니트" "코트")
Fuzzy 검색	검색어와 유사한 Doc 검색	경상복도~
Proximity 검색	검색어의 순서를 변경해서 Doc 검색	배송메모: "내에 시간 배송 못함"~2
Numeric Value 검색	특정 Field 값이 입력값보다 큰 (또는 작은) Doc 검색	상품가격:>5000
Range 검색	특정 Field 값이 입력값 사이에 있는 Doc 검색	고객나이: [10 TO 30}
Wildcard ? 검색	Wildcard ? (한글자)를 활용해서 Doc 검색	서?특별시
Wildcard * 검색	Wildcard * (생략 혹은 그 이상)를 활용해서 Doc 검색	상품*:셔츠
OR 연산 (||)	여러 검색 조건들을 OR로 묶어 검색 수행	고객성별: 여성 OR 상품분류:셔츠
AND 연산 (&&)	여러 검색 조건들을 AND로 묶어 검색 수행	고객성별: 여성 AND 상품분류:셔츠
NOT 연산 (!)	뒤이어 오는 조건을 부정해서 검색 수행	NOT 구매사이트:옥션
Must be Present 연산	바로 뒤에 오는 조건을 만족하는 Doc 검색	+예약여부:예약
Must not be Present 연산	바로 뒤에 오는 조건을 만족하지 않는 Doc 검색	-구매사이트:11번가

Search Type - Keyword



Search Type - Field Match 👑

Dashboard / shopping

Full screen Share Clone Edit ▶ 5 seconds This year

결제카드:우리 Uses lucene query syntax

Add a filter +

1. 입력

2. 클릭

[shopping] markdown

Elastic Stack을 활용한 Data Dashboard 만들기 CAMP

- 강의자료
- 강의질문
- Markdown문법

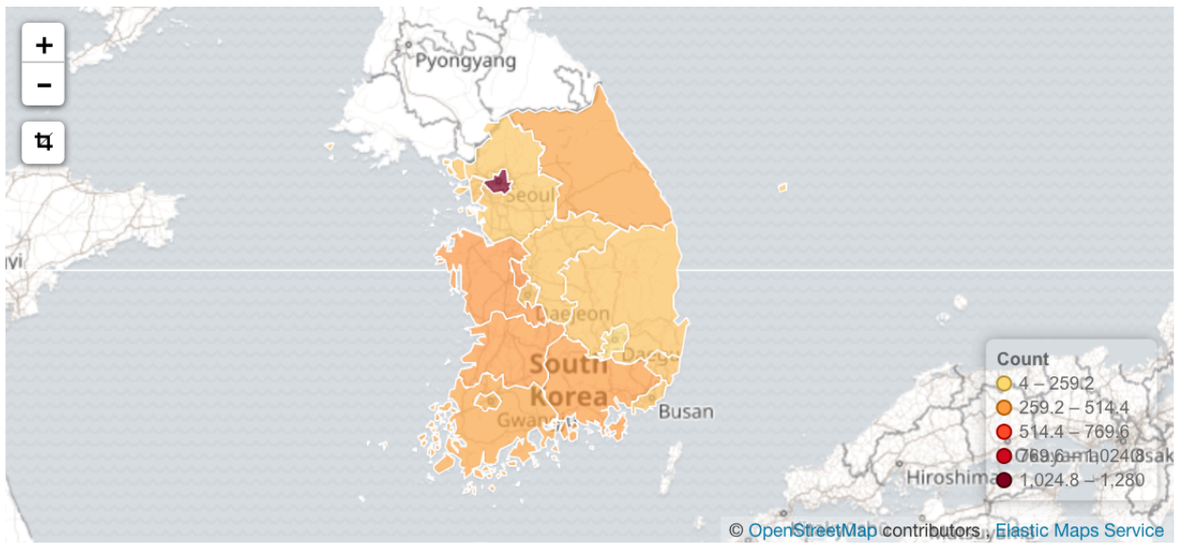
[shopping] metrics

4,504

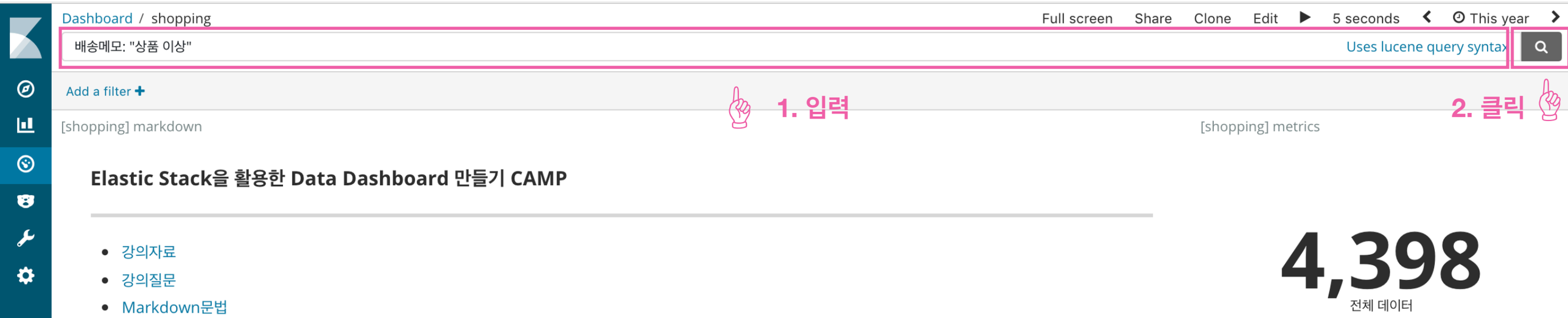
전체 데이터

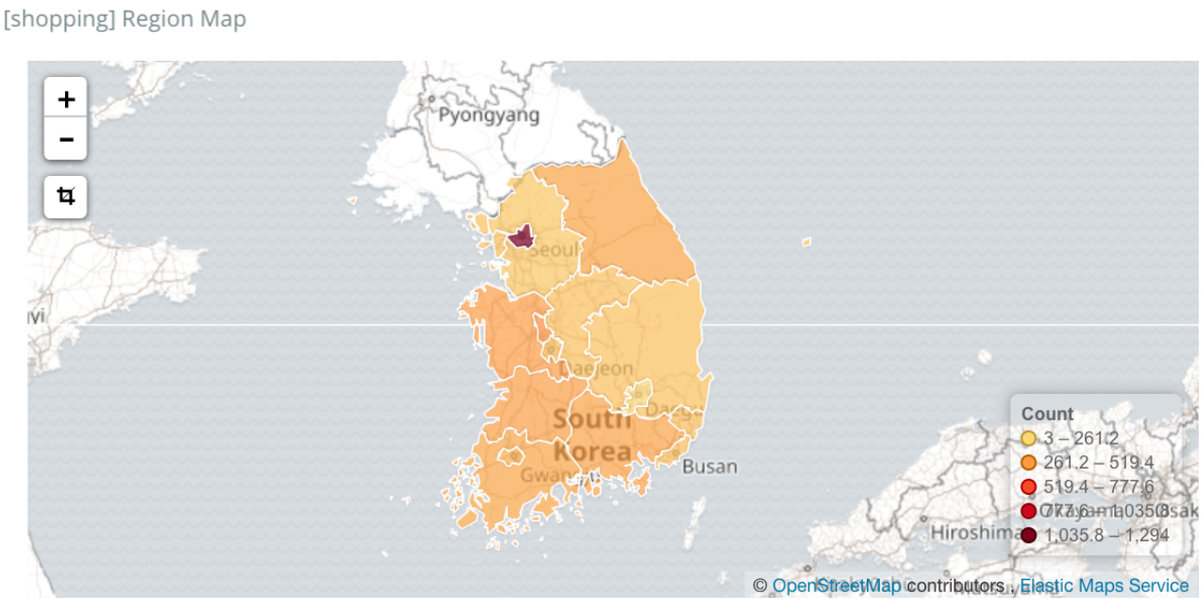
[shopping] Tag Cloud

[shopping] Region Map



Search Type - Exact Field Match 👑





Search Type - Term

Dashboard / shopping

Full screen Share Clone Edit 5 seconds This year

상품분류:("니트" "코트")

Uses lucene query syntax

Add a filter +

1. 입력

2. 클릭

[shopping] markdown

Elastic Stack을 활용한 Data Dashboard 만들기 CAMP

- 강의자료
- 강의질문
- Markdown문법

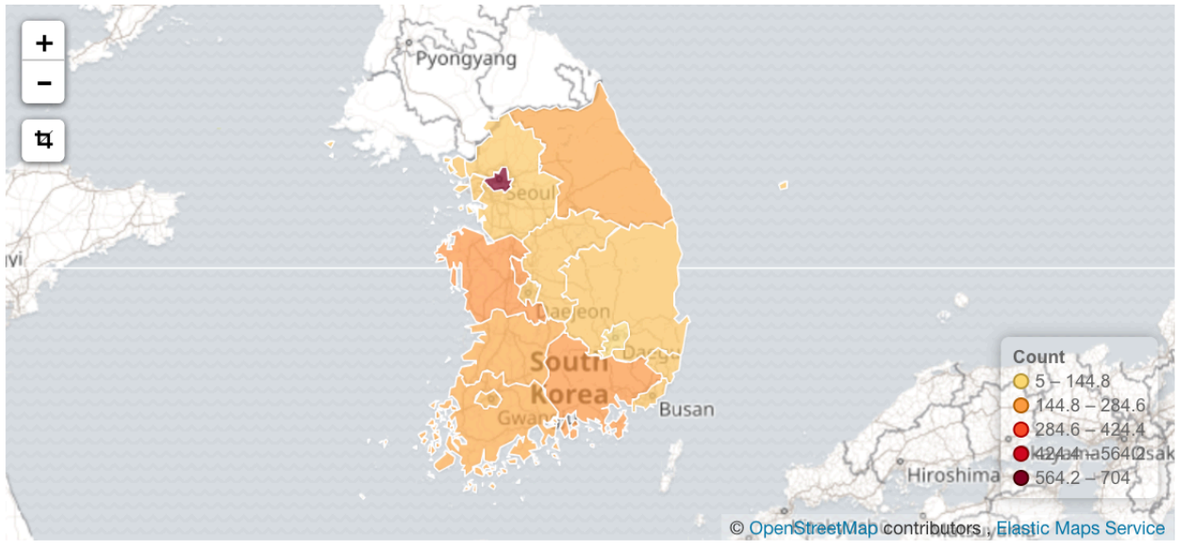
[shopping] metrics

2,389

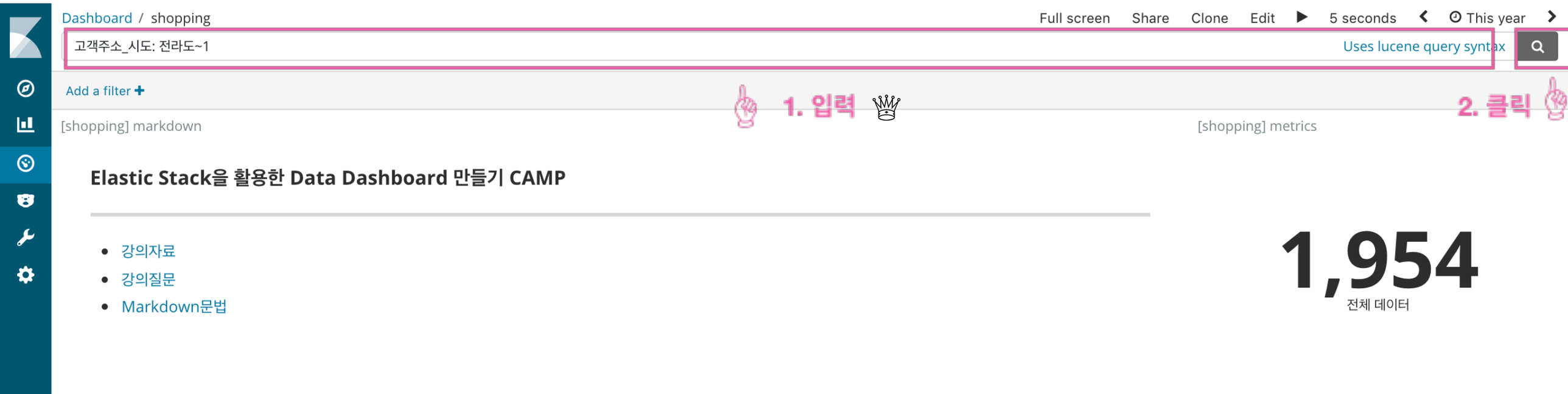
전체 데이터

[shopping] Tag Cloud

[shopping] Region Map



Search Type - Fuzzy 👑

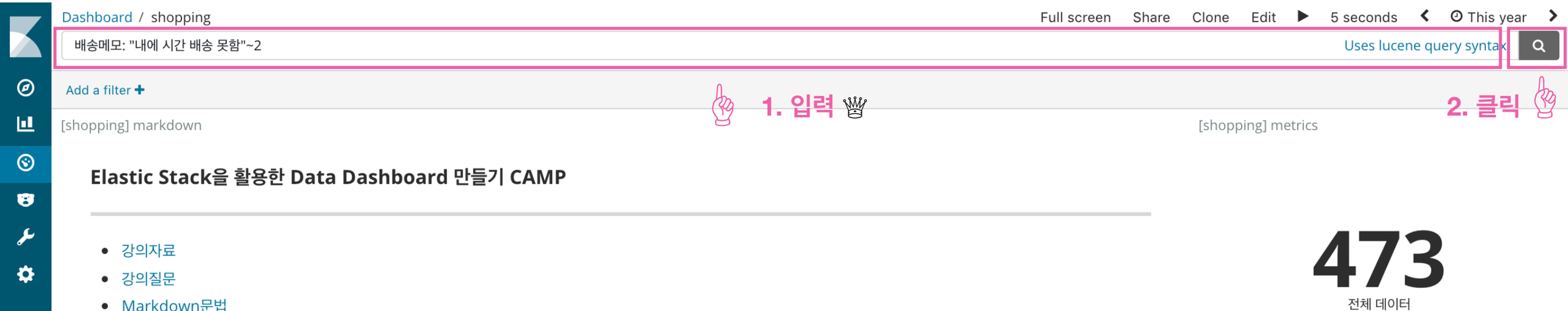


[shopping] Tag Cloud

[shopping] Region Map

“전라남도” 와 “전라북도”가 위의 검색에 match된다

Search Type - Proximity 👑



[shopping] Tag Cloud

[shopping] Region Map

“시간 내에 배송 못함”이 위의 검색에 match된다

Search Type - Numeric

Dashboard / shopping

Full screen Share Clone Edit 5 seconds This year

상품가격:>5000 Uses lucene query syntax

Add a filter +

1. 입력

2. 클릭

[shopping] markdown

Elastic Stack을 활용한 Data Dashboard 만들기 CAMP

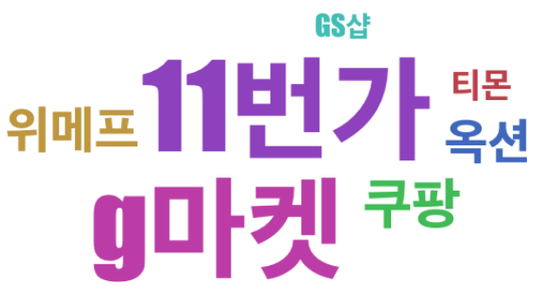
- 강의자료
- 강의질문
- Markdown문법

[shopping] metrics

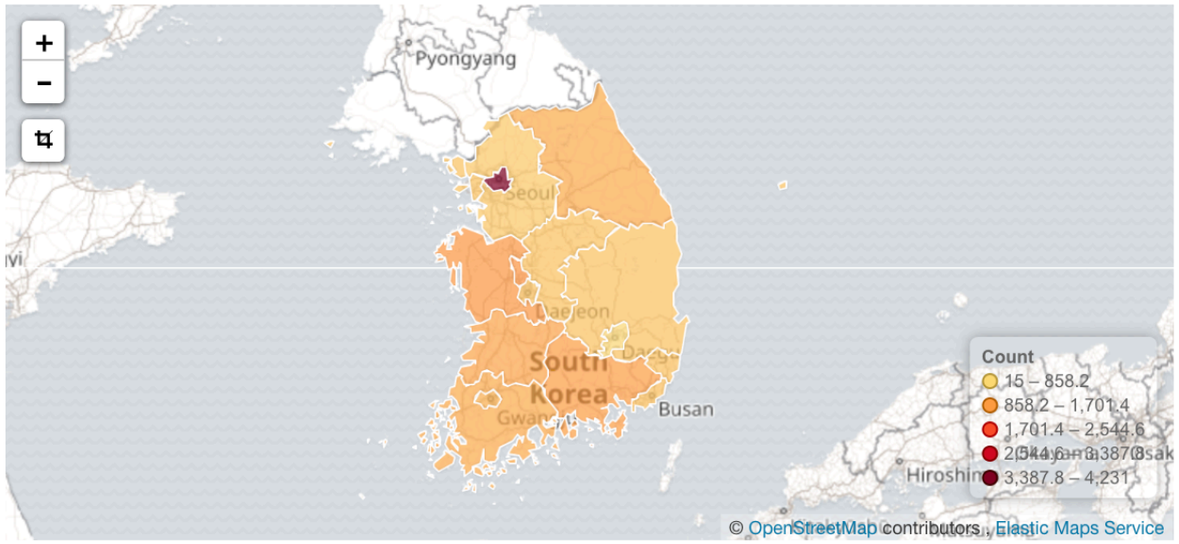
14,339

전체 데이터

[shopping] Tag Cloud



[shopping] Region Map



Search Type - Range 👑

Dashboard / shopping

Full screen Share Clone Edit ▶ 5 seconds This year

고객나이: [10 TO 30]

Uses lucene query syntax

Add a filter +

1. 입력

2. 클릭

[shopping] markdown

Elastic Stack을 활용한 Data Dashboard 만들기 CAMP

- 강의자료
- 강의질문
- Markdown문법

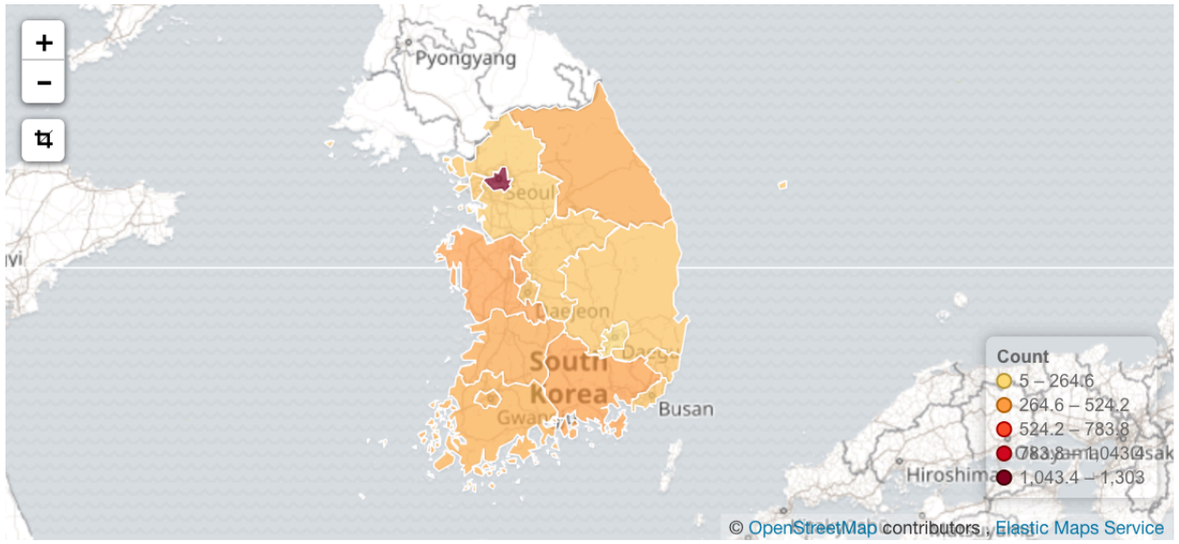
[shopping] metrics

4,376

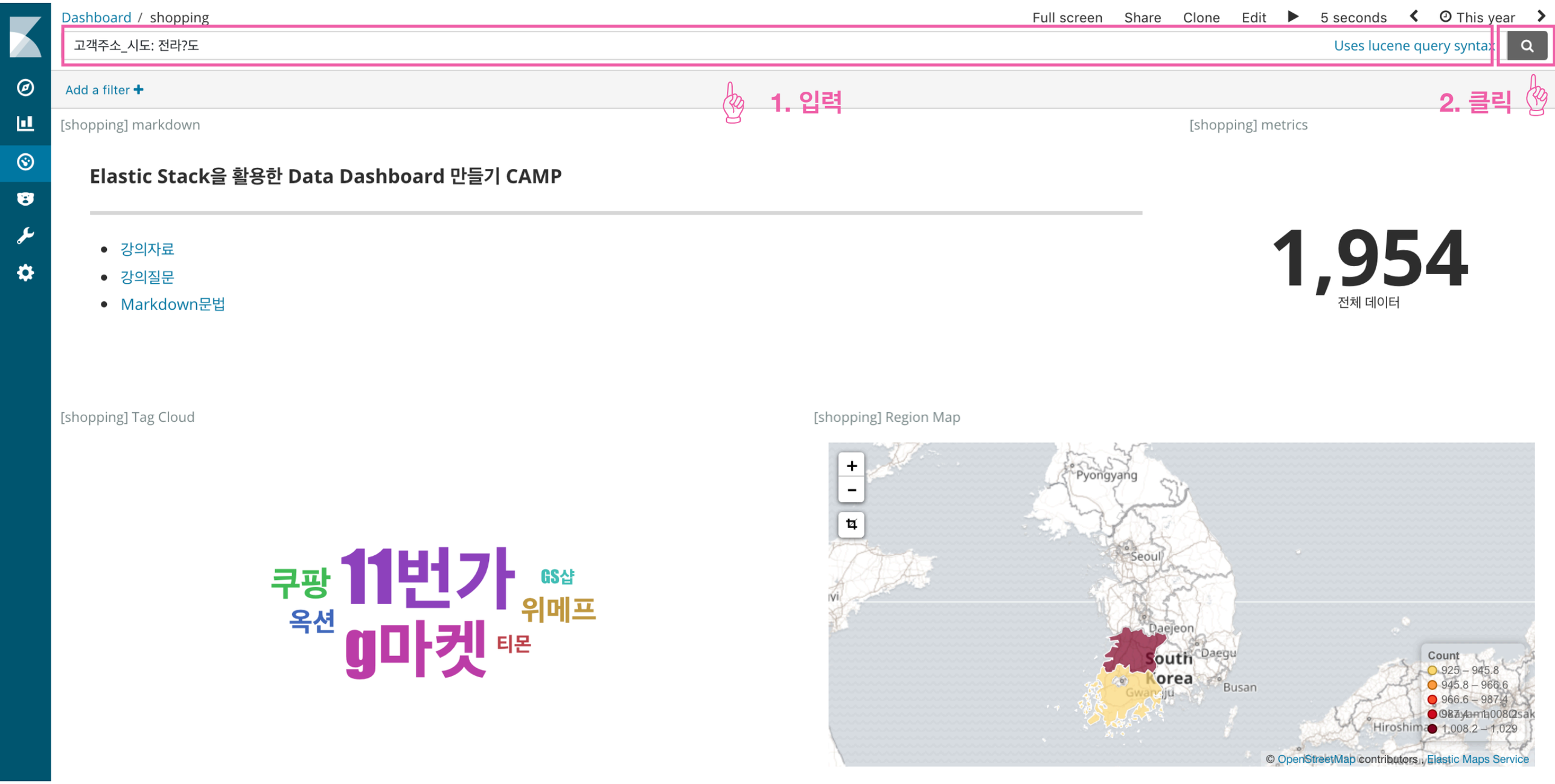
전체 데이터

[shopping] Tag Cloud

[shopping] Region Map



Search Type - Wildcard



"전라남도" 와 "전라북도"가 위의 검색에 match된다

Search Type - Wildcard

Dashboard / Editing shopping (unsaved)

Save Cancel Add Options Share Auto-refresh This month

상품*:셔츠 Uses lucene query syntax

Add a filter +

1. 입력

2. 클릭

[shopping] markdown

Elastic Stack을 활용한 Data Dashboard 만들기 CAMP

- 강의자료
- 강의질문
- Markdown문법

[shopping] metrics

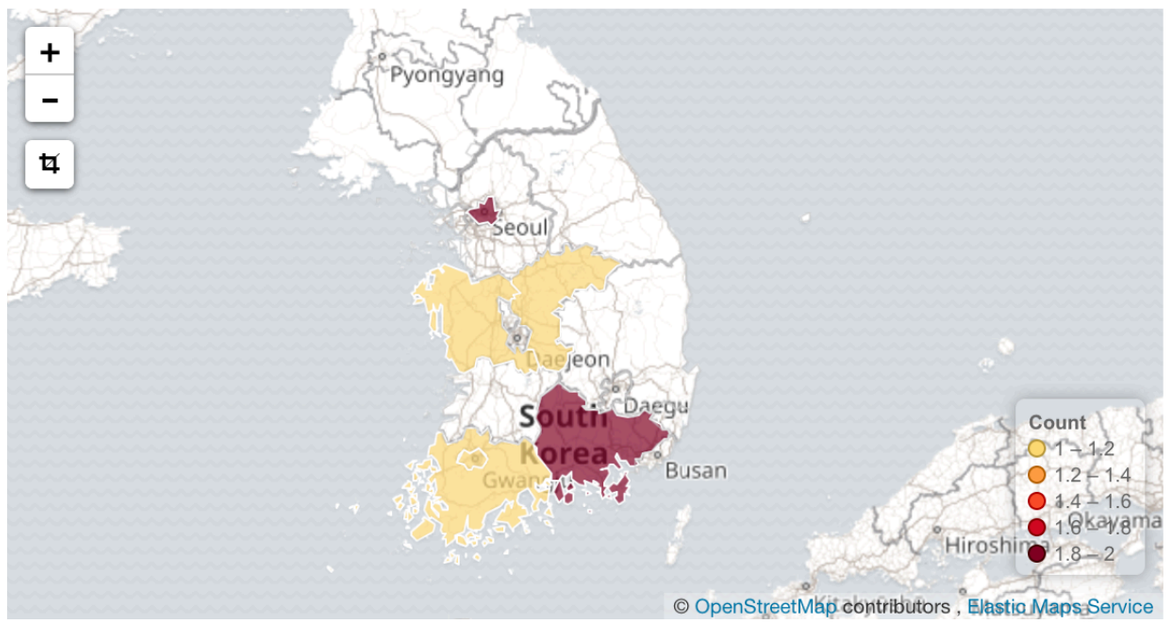
8

전체 데이터

[shopping] Tag Cloud

g마켓 옥션 쿠팡 티몬

[shopping] Region Map



"상품_분류" Field의 값이 셔츠인 Documents가 match된다

Search Type - OR 👑

Dashboard / shopping

Full screen Share Clone Edit ▶ 5 seconds This year

고객성별: 여성 OR 상품분류: 셔츠 Uses lucene query syntax

Add a filter +

1. 입력

2. 클릭

[shopping] markdown

Elastic Stack을 활용한 Data Dashboard 만들기 CAMP

- 강의자료
- 강의질문
- Markdown문법

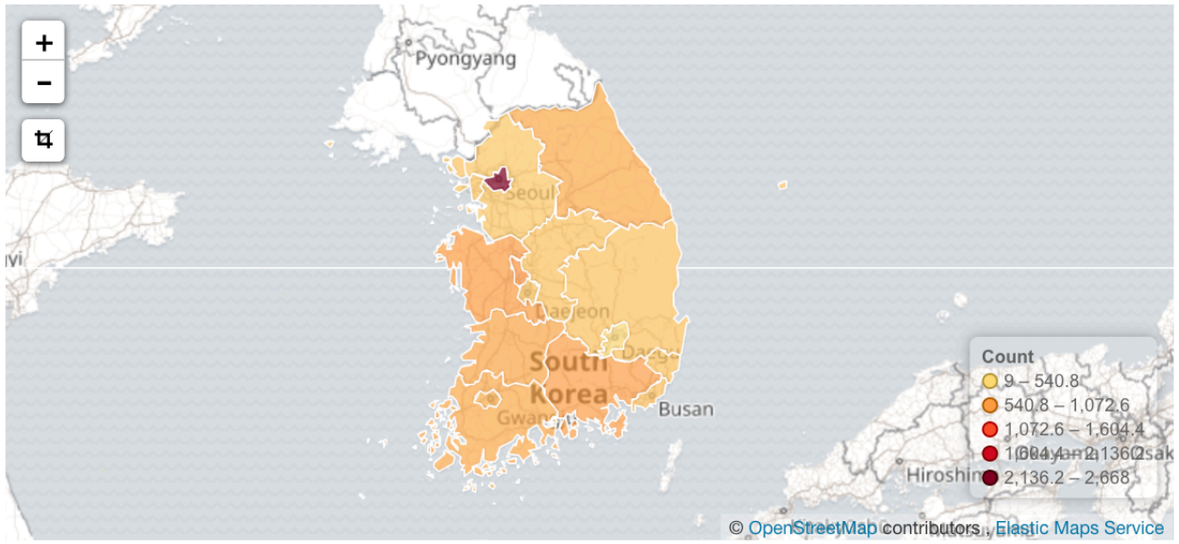
[shopping] metrics

8,904

전체 데이터

[shopping] Tag Cloud

[shopping] Region Map



Search Type - AND

Dashboard / shopping

Full screen Share Clone Edit 5 seconds This year

고객성별: 여성 AND 상품분류: 셔츠

Uses lucene query syntax

Add a filter +

1. 입력

2. 클릭

[shopping] markdown

Elastic Stack을 활용한 Data Dashboard 만들기 CAMP

- 강의자료
- 강의질문
- Markdown문법

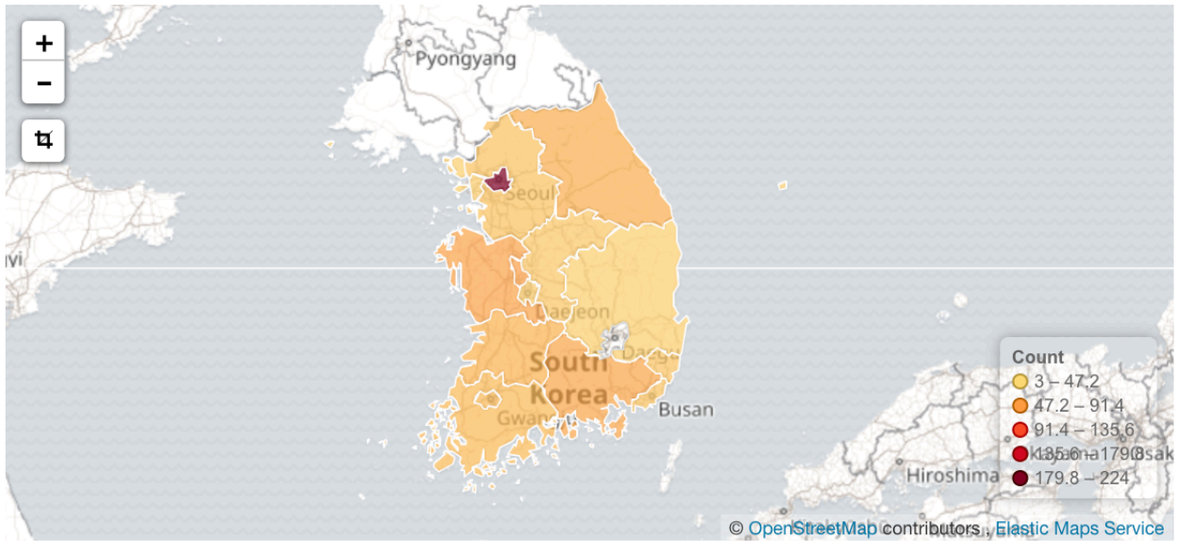
[shopping] metrics

657

전체 데이터

[shopping] Tag Cloud

[shopping] Region Map



Search Type - NOT

Dashboard / shopping

Full screen Share Clone Edit 5 seconds This year

NOT 구매사이트:옥션

Uses lucene query syntax

Add a filter +

1. 입력

2. 클릭

[shopping] markdown

Elastic Stack을 활용한 Data Dashboard 만들기 CAMP

- 강의자료
- 강의질문
- Markdown문법

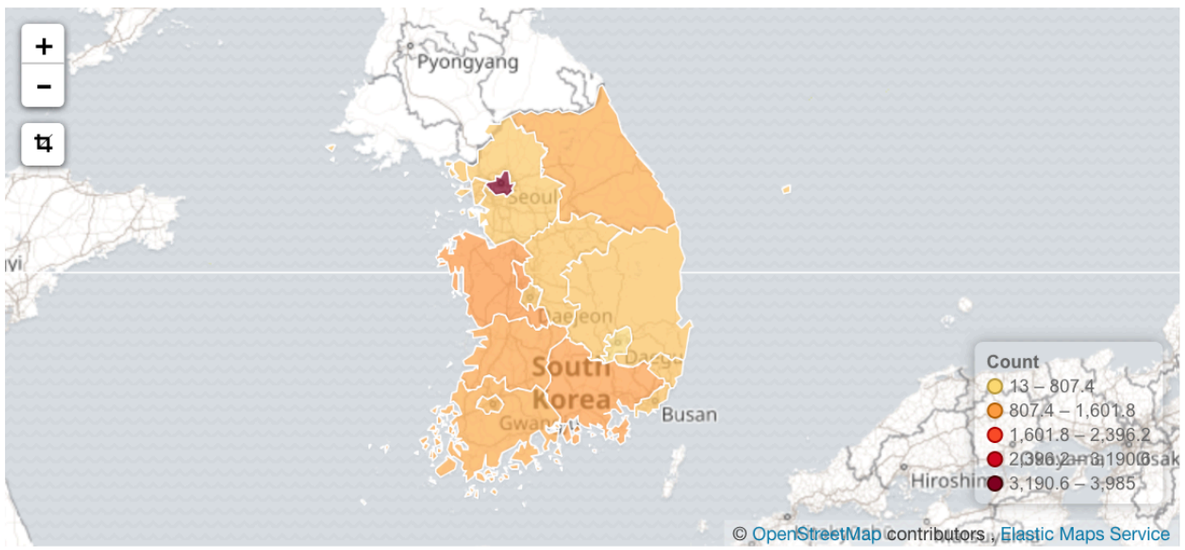
[shopping] metrics

13,503

전체 데이터

[shopping] Tag Cloud

[shopping] Region Map



Search Type +

Dashboard / shopping

Full screen Share Clone Edit ▶ 5 seconds This year

+예약여부:예약

Uses lucene query syntax

Add a filter +

1. 입력

2. 클릭

[shopping] markdown

Elastic Stack을 활용한 Data Dashboard 만들기 CAMP

- 강의자료
- 강의질문
- Markdown문법

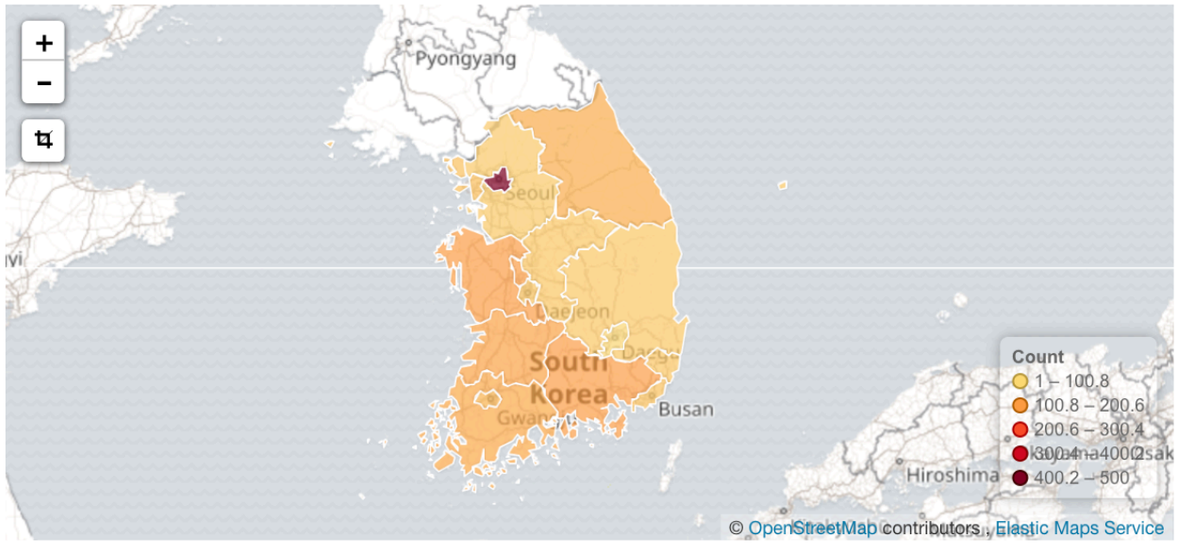
[shopping] metrics

1,545

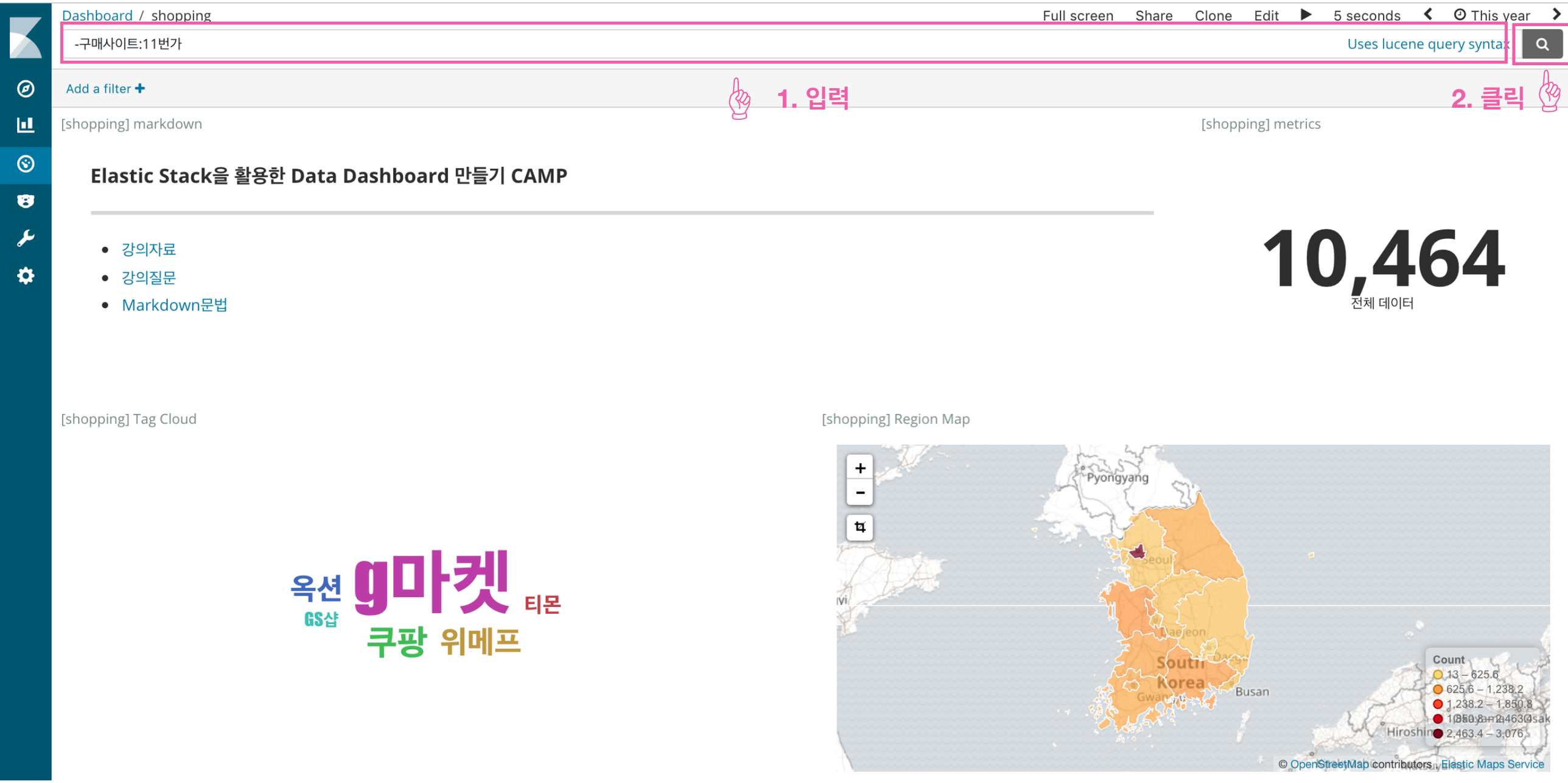
전체 데이터

[shopping] Tag Cloud

[shopping] Region Map



Search Type -

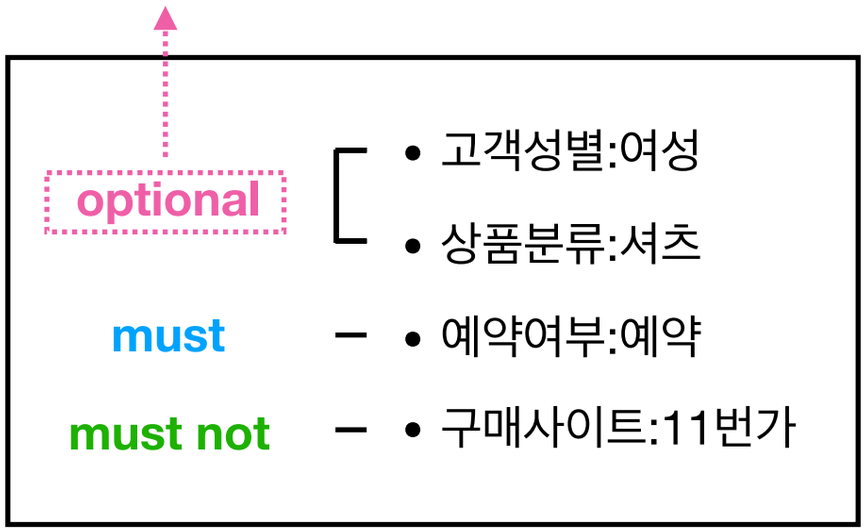

Dashboard / shopping
Full screen
Share
Clone
Edit
5 seconds
This year
-구매사이트:11번가
Uses lucene query syntax
Add a filter +
1. 입력
2. 클릭
[shopping] markdown
Elastic Stack을 활용한 Data Dashboard 만들기 CAMP
강의자료
강의질문
Markdown문법
[shopping] metrics
10,464
전체 데이터
[shopping] Tag Cloud
옥션
g마켓
티몬
GS샵
쿠팡
위메프
[shopping] Region Map
Pyongyang
Seoul
Daejeon
South Korea
Busan
Hiroshima
Count
13 – 625.6
625.6 – 1,238.2
1,238.2 – 1,850.8
1,850.8 – 2,463.4
2,463.4 – 3,076
© OpenStreetMap contributors, Elastic Maps Service

잠깐4 심화

AND, OR, NOT으로도 충분해 보이는데 +, - 은 왜 필요할까? 👑

다음과 같은 조건으로 검색하려면 Query Bar에 뭐라고 입력해야 할까? 심화

필수는 아니지만 만족하는 Doc의 **score** ↑



조건이 너무 복잡하고, 가독성이 떨어지며, 에러 내기 쉽다 심화

- ~~여성 OR 셔츠 AND 예약 AND NOT 11번가~~
- ~~(여성 OR 셔츠) AND 예약 AND NOT 11번가~~
- **((여성 AND 예약) OR (셔츠 AND 예약) OR 예약) AND NOT 11번가**

이 때 +, -을 사용하면 쉽게 구현할 수 있다 👑 심화

Dashboard / shopping

Full screen Share Clone Edit ▶ 5 seconds This year

여성 셔츠 +예약 -11번가

Uses lucene query syntax

Add a filter +

[shopping] markdown

Elastic Stack을 활용한 Data Dashboard 만들기 CAMP

- 강의자료
- 강의질문
- Markdown문법

[shopping] metrics

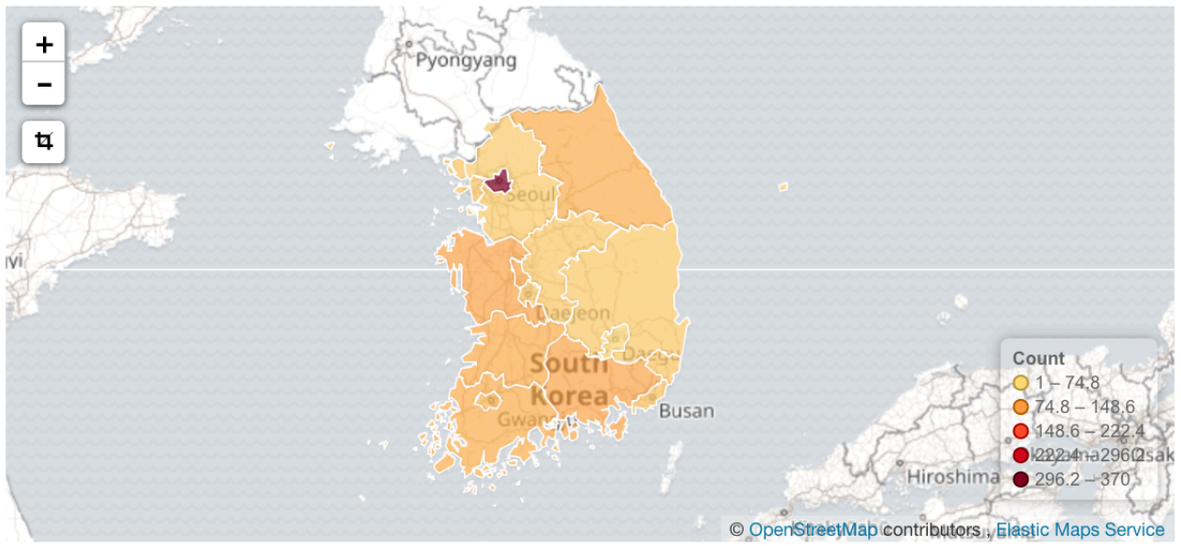
1,091

전체 데이터

[shopping] Tag Cloud

티몬 g마켓 위메프
GS샵
쿠팡 옥션

[shopping] Region Map



예제 5 - 아래와 같은 Query를 Dashboard에서 검색해보자

Dashboard : nginx-*

Time Range : 2018년 6월 1일 ~ 2018년 8월 26일

문제	종류
nginx.access.response_code가 200인 Doc 필터링	**Field Match**
nginx.access.method가 GET 또는 POST인 Doc 필터링	**Term**
nginx.access.geoip.region_name가 non-null 값만 가지는 Doc 필터링	**exists**
nginx.access.geoip.city_name이 Seoul이면서 nginx.access.user_agent.name이 Chrome인 Doc 필터링	**AND 연산**
nginx.access.geoip.city_name이 Seoul이거나 nginx.access.user_agent.name이 Chrome인 Doc 필터링	**OR 연산**
요일_local이 SUNDAY인 Doc 필터링	?
nginx.access.geoip.country_name 가 “Republic of”로 시작하는 Doc 필터링	**Wildcard**
nginx.access.geoip.continent_code가 “AS”와 유사한 Doc 필터링	**Fuzzy**

Filter와 Search를 비교해보자

문제	Filter	Search
nginx.access.response_code가 200인 Doc	✓	✓
nginx.access.method가 GET 또는 POST인 Doc	✓	✓
nginx.access.geoip.region_name가 non-null값만 가지는 Doc	✓	✓
nginx.access.geoip.city_name이 Seoul이면서 nginx.access.user_agent.name이 Chrome인 Doc	✓	✓
nginx.access.geoip.city_name이 Seoul이거나 nginx.access.user_agent.name이 Chrome인 Doc		✓
요일_local이 Sunday인 Doc 필터링	✓	
nginx.access.geoip.country_name 가 Republic of로 시작하는 Doc		✓
nginx.access.geoip.continent_code가 AS와 유사한 Doc		✓

AND 연산

OR 연산

Scripted Field

Wildcard 검색

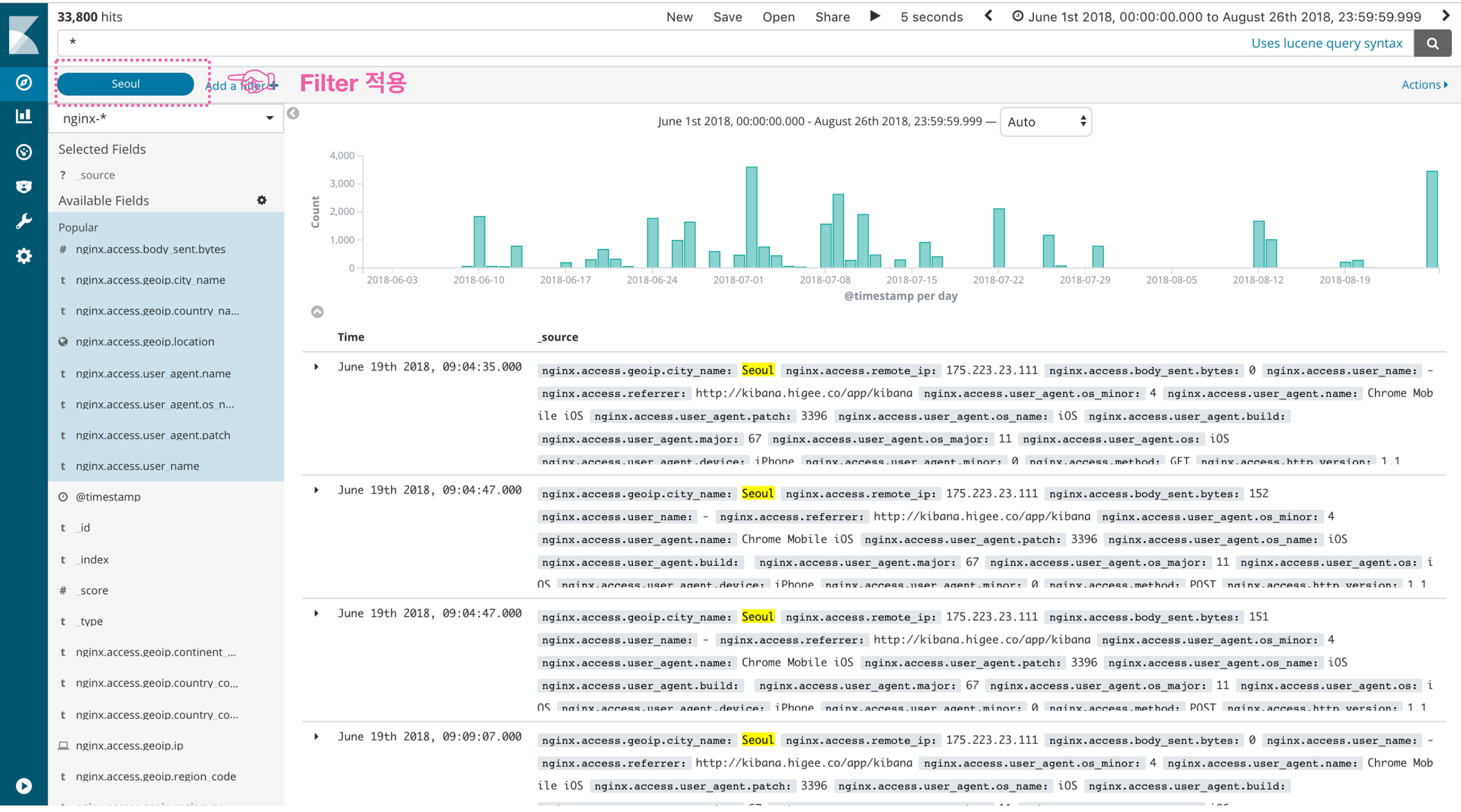
Fuzzy/Proximity 검색


Discover

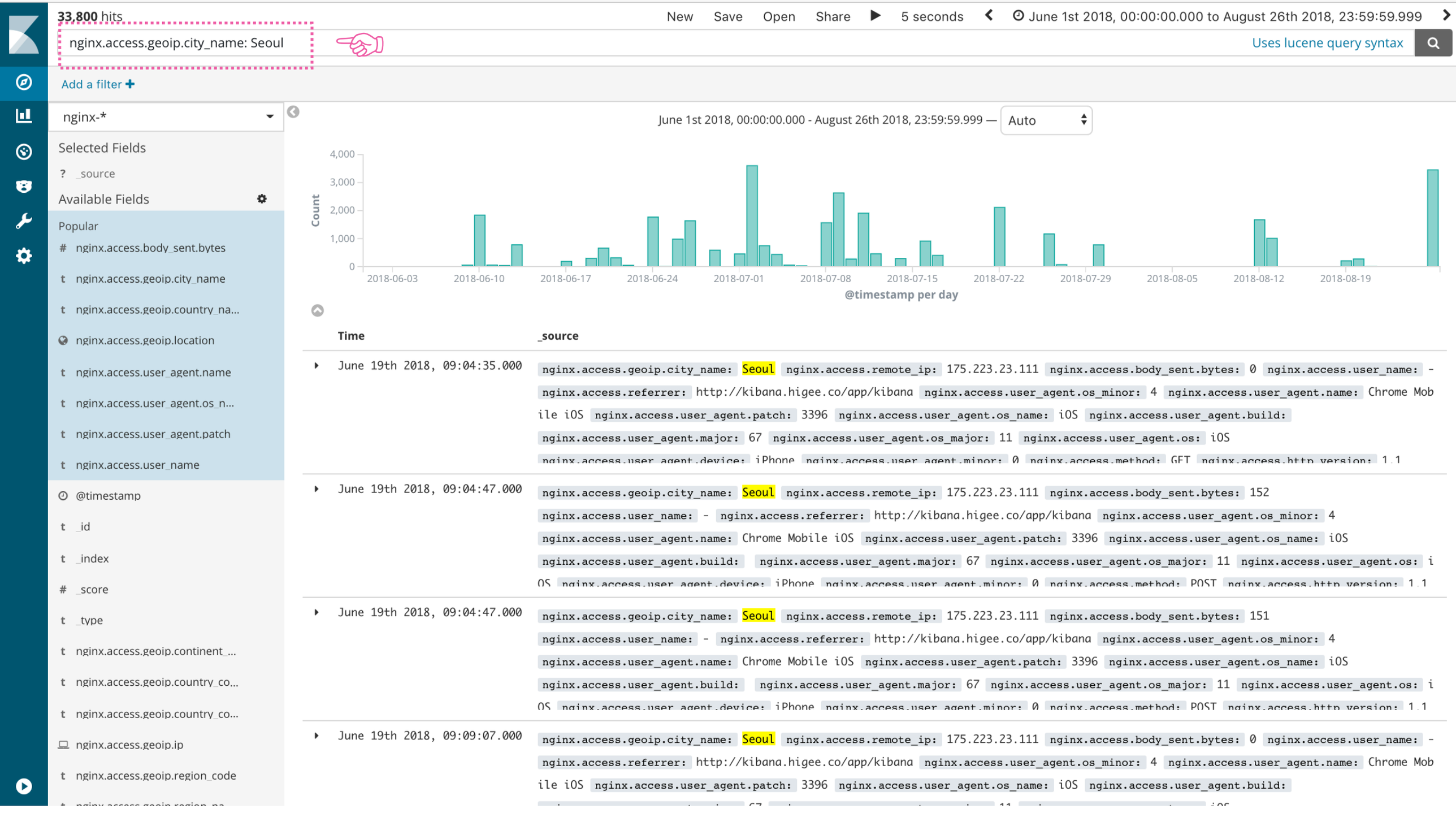
데이터를 시각화 하기 전에 데이터를 탐색하는 과정

주요 기능	세부 기능
데이터 검색	(복잡한) 조건을 만족하는 데이터 선별적 탐색 가능
데이터 필터링	(간단한) 특정 조건을 만족하는 데이터 선별적 탐색 가능
데이터 검색 저장	검색한 결과를 저장하여 Visualize에서 사용
~~데이터 조회~~	• ~~특정 Document를 Table/JSON 형태 조회~~ • ~~Histogram 특정 구간 내의 데이터 조회~~ • ~~Histogram Bin 간격 설정~~ • ~~Histogram 데이터를 csv 출력~~ • ~~특정 Field의 정보만 조회~~ • ~~특정 Field 값을 기준으로 정렬~~
~~데이터 통계~~	• ~~(선택한 Time Range 내의) Documents 개수 확인~~ • ~~특정 Field Value의 분포 확인 (주로 Categorical Data, 상위 500개)~~ • ~~특정 Field에 non-null Value가 아닌 Documents 수 확인~~

Discover에서 Filter를 적용해보자



Discover에서 Search를 해보자



잠깐5, 이걸로 뭘 할 수 있을까?

: 특정한 조건을 만족하는 데이터만 선별해서 시각화 할 수 있다.

검색 결과 저장

2. 검색 결과 저장

33,800 hits | New | Save | Open | Share | 5 seconds | June 1st 2018, 00:00:00.000 to August 26th 2018, 23:59:59.999

Save Search

서울 접속 데이터

3. 검색 결과를 이름을 지정하여 저장

Save

nginx.access.geoip.city_name: Seoul

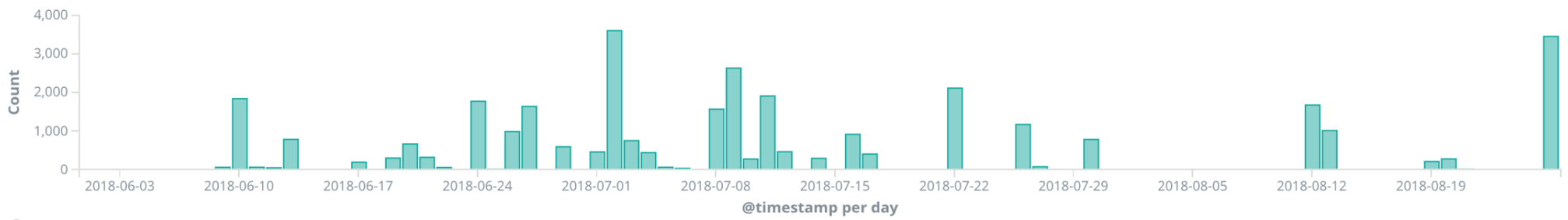
1. Lucene Query 작성 (혹은 필터 적용)

Uses lucene query syntax

Add a filter +

nginx-*

June 1st 2018, 00:00:00.000 - August 26th 2018, 23:59:59.999 — Auto



Selected Fields

? _source

Available Fields

Popular

nginx.access.body_sent.bytes

t nginx.access.geoip.city_name

t nginx.access.geoip.country_na...

nginx.access.geoip.location

t nginx.access.user_agent.name

t nginx.access.user_agent.os_n...

t nginx.access.user_agent.patch

t nginx.access.user_name

@timestamp

t _id

t _index

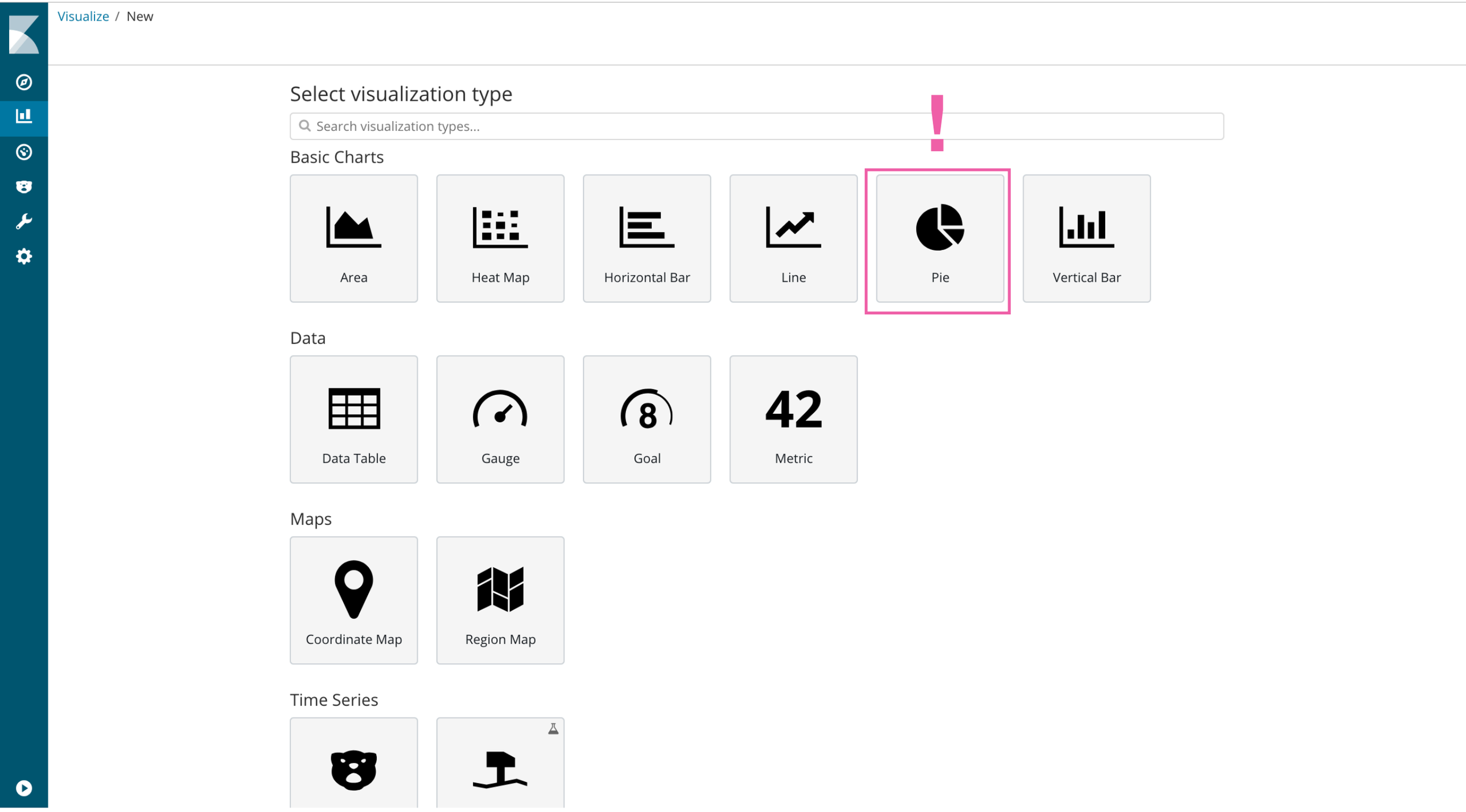
_score

t _type

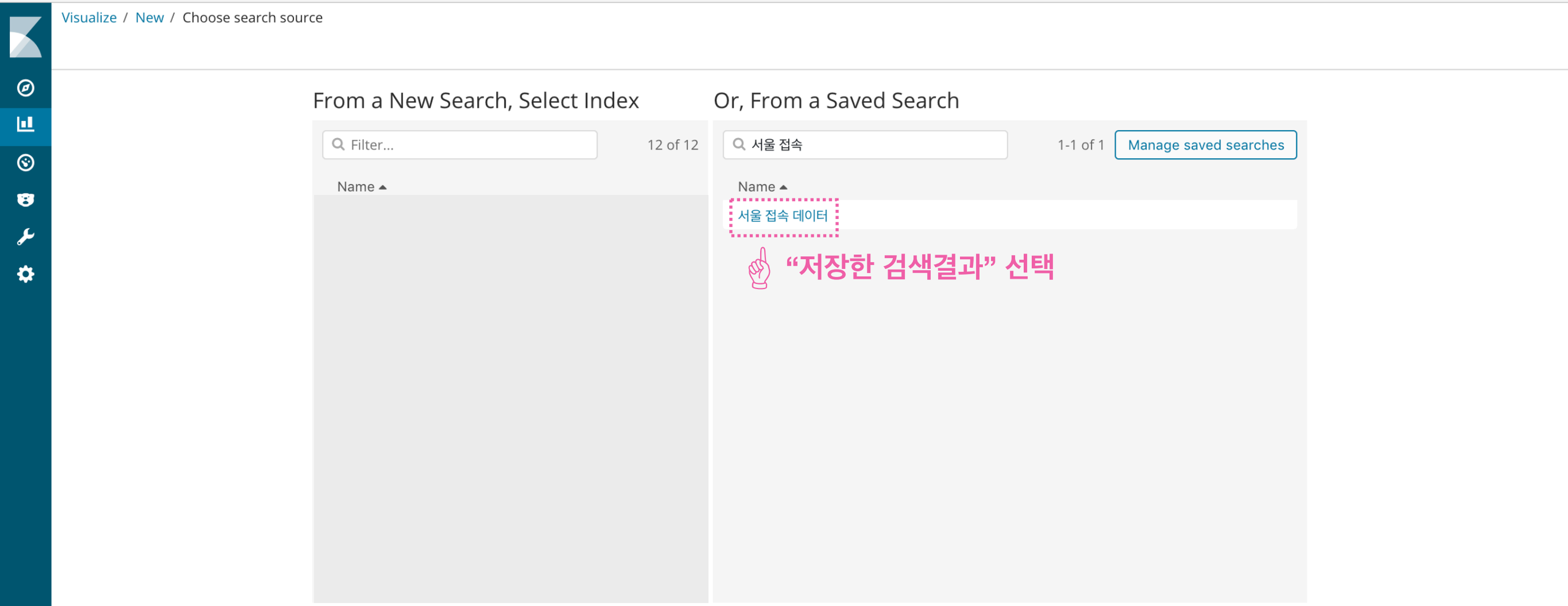
t nginx.access.geoip.continent_...

Time	_source
June 19th 2018, 09:04:35.000	nginx.access.geoip.city_name: Seoul nginx.access.remote_ip: 175.223.23.111 nginx.access.body_sent.bytes: 0 nginx.access.user_name: - nginx.access.referrer: http://kibana.higee.co/app/kibana nginx.access.user_agent.os_minor: 4 nginx.access.user_agent.name: Chrome Mobile iOS nginx.access.user_agent.patch: 3396 nginx.access.user_agent.os_name: iOS nginx.access.user_agent.build: nginx.access.user_agent.major: 67 nginx.access.user_agent.os_major: 11 nginx.access.user_agent.os: iOS nginx.access.user_agent.device: iPhone nginx.access.user_agent.minor: 0 nginx.access.method: GET nginx.access.http_version: 1.1
June 19th 2018, 09:04:47.000	nginx.access.geoip.city_name: Seoul nginx.access.remote_ip: 175.223.23.111 nginx.access.body_sent.bytes: 152 nginx.access.user_name: - nginx.access.referrer: http://kibana.higee.co/app/kibana nginx.access.user_agent.os_minor: 4 nginx.access.user_agent.name: Chrome Mobile iOS nginx.access.user_agent.patch: 3396 nginx.access.user_agent.os_name: iOS nginx.access.user_agent.build: nginx.access.user_agent.major: 67 nginx.access.user_agent.os_major: 11 nginx.access.user_agent.os: iOS nginx.access.user_agent.device: iPhone nginx.access.user_agent.minor: 0 nginx.access.method: POST nginx.access.http_version: 1.1
June 19th 2018, 09:04:47.000	nginx.access.geoip.city_name: Seoul nginx.access.remote_ip: 175.223.23.111 nginx.access.body_sent.bytes: 151 nginx.access.user_name: - nginx.access.referrer: http://kibana.higee.co/app/kibana nginx.access.user_agent.os_minor: 4 nginx.access.user_agent.name: Chrome Mobile iOS nginx.access.user_agent.patch: 3396 nginx.access.user_agent.os_name: iOS

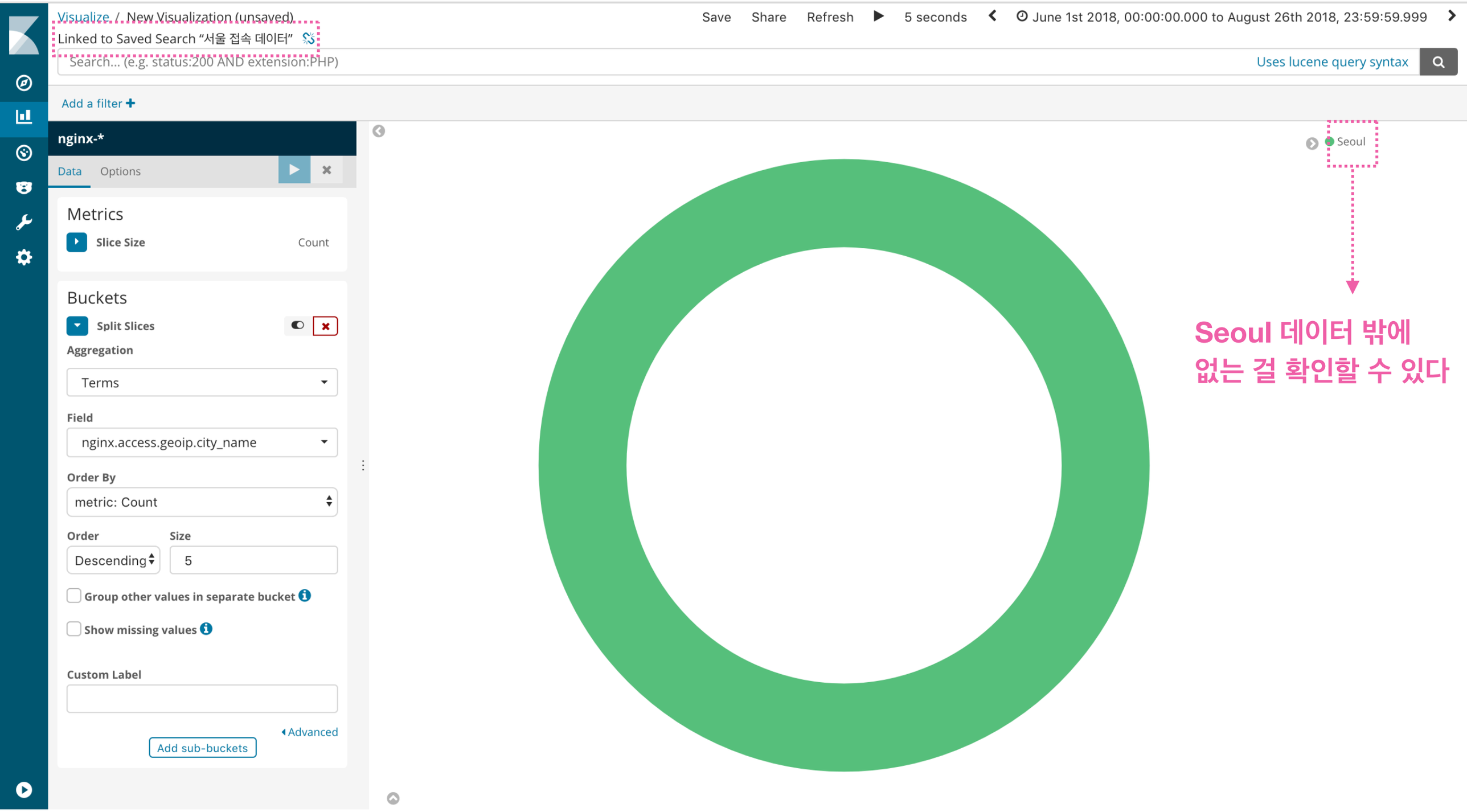
저장된 검색 결과를 이용한 시각화 1단계



저장된 검색 결과를 이용한 시각화 2단계



저장된 검색 결과를 이용한 시각화 3단계

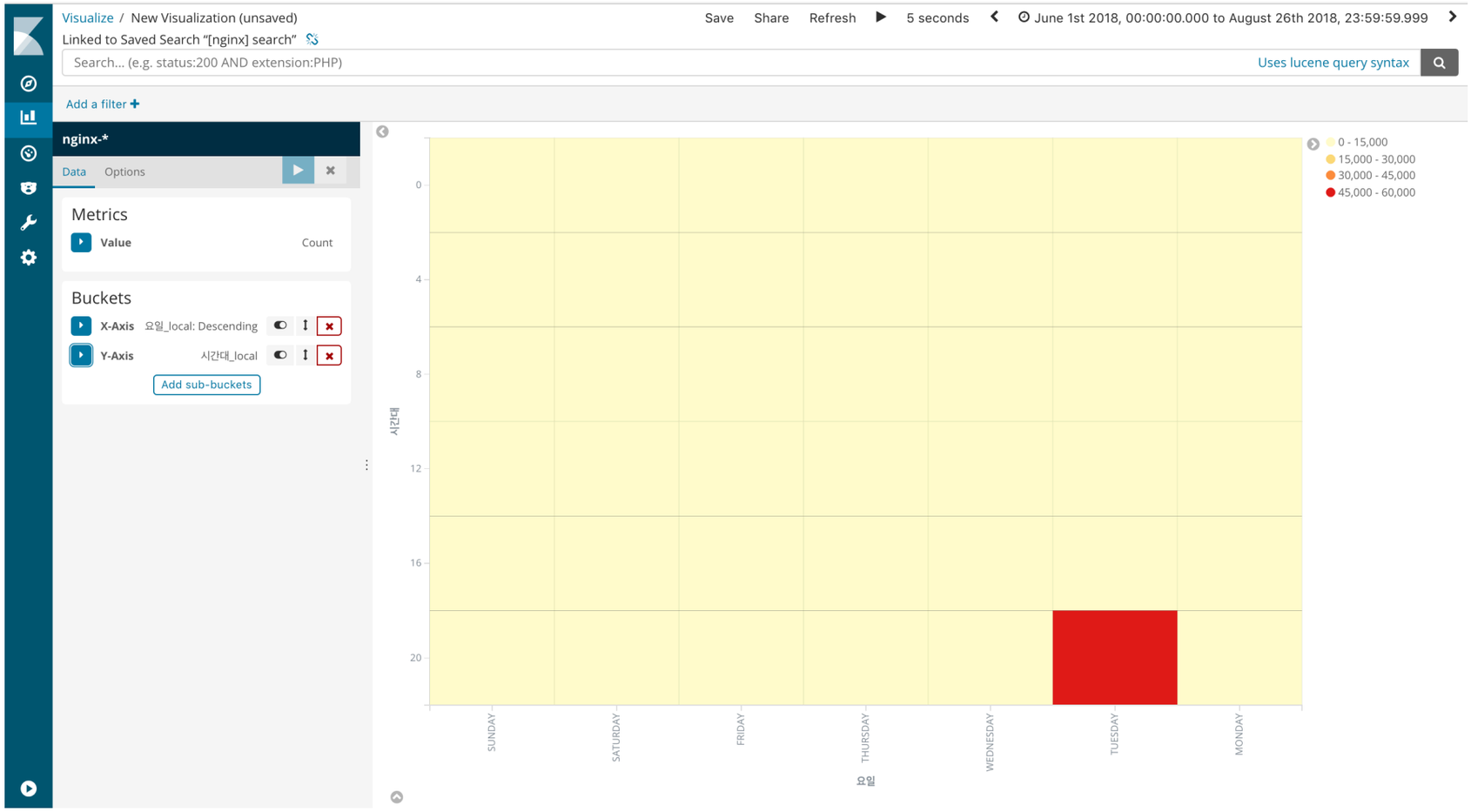


예제 6.1 - 검색을 이용해서 아래 조건에 해당하는 데이터만 저장하자

- Index : nginx-*
- 조건 :
  - must
    - nginx.access.geoip.region_name가 non-null value인 Doc
    - nginx.access.geoip.city_name가 “Se”로 시작하는 Doc
  - must not : nginx.access.response_code가 200 및 405이 아닌 Doc
  - optional : nginx.access.method가 POST인 Doc

저장시 이름은 id-search 형식. 예시) higee-search

예제 6.2- 앞서 저장한 결과로 아래와 같은 시각화를 하자



조건

- "@timestamp" field 기준 **"2018-06-01 ~ 2018-08-26"** 동안
- 요일별 시간대별 접속자 수
  - 요일별 : 요일_local Field 사용 (요일_local_sort field 이용해 요일 정렬)
  - 시간대별 : 시간대_local Field를 사용하여 4시간 간격으로 집계

질문 및 Feedback은

gshock94@gmail.com로 주세요