

# PROIECT BUSINESS INTELLIGENCE

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**Cuprins**

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## **Descriere scenariu**

Alba este un judet situat in partea centrala a Romaniei, ocupa 2.6% din suprafata Romaniei si are aproximativ 416.000 de locuitori. Se invecineaza cu jud Cluj, Bihor, Arad, Valcea, Sibiu si Mures. Resedinta de judet este la Alba-Iulia,

Analiza de mai jos a fost realizata folosind datele din perioada 2016-2020. Scopul acesteia este sa aflam mai multe despre companiile cele mai prospere din judetul Alba, dar si domeniile in care acestea activeaza. In urma acestei analiza va fi mai clar ce domenii sunt profitabile si in care regiuni din judetul Alba s-au concentrat.

Analiza contine:

- Top 10 domenii (profit minim vs profit maxim pe perioada 2016-2020)
- Top 10 companii (profit 2016 vs profit 2020)
- Evolutia companiilor din top 10
- Localizarea companiilor din top 10
- Localizare generala a companiilor din jud Alba
- Localizare a top 10 domenii profitabile

## Pregatirea datelor

### Colectarea seturilor de date

Fiind de origine din judetul Alba, am ales sa analizez datele companiilor din acest judet. Datele au fost luate de pe <https://data.gov.ro/dataset> :

- Situatii Financiare
  - Link: [https://data.gov.ro/dataset?q=situatii+financiare&sort=score+desc%2C+metadata\\_modified+desc](https://data.gov.ro/dataset?q=situatii+financiare&sort=score+desc%2C+metadata_modified+desc)
  - Extensie sursa de date: web\_uu\_an20XX.txt
  - Observatie: s-au folosit fisierele anilor 2016-2020
- Lista firme judetul Alba:
  - Link: [https://data.gov.ro/dataset/informatii\\_fiscale\\_mai\\_2020](https://data.gov.ro/dataset/informatii_fiscale_mai_2020)
  - Extensie sursa de date: alba.csv
- Coduri CAEN:
  - Link: [https://github.com/StemateF/CAEN\\_db](https://github.com/StemateF/CAEN_db)
  - Extensie sursa db: Caen\_DB.sql

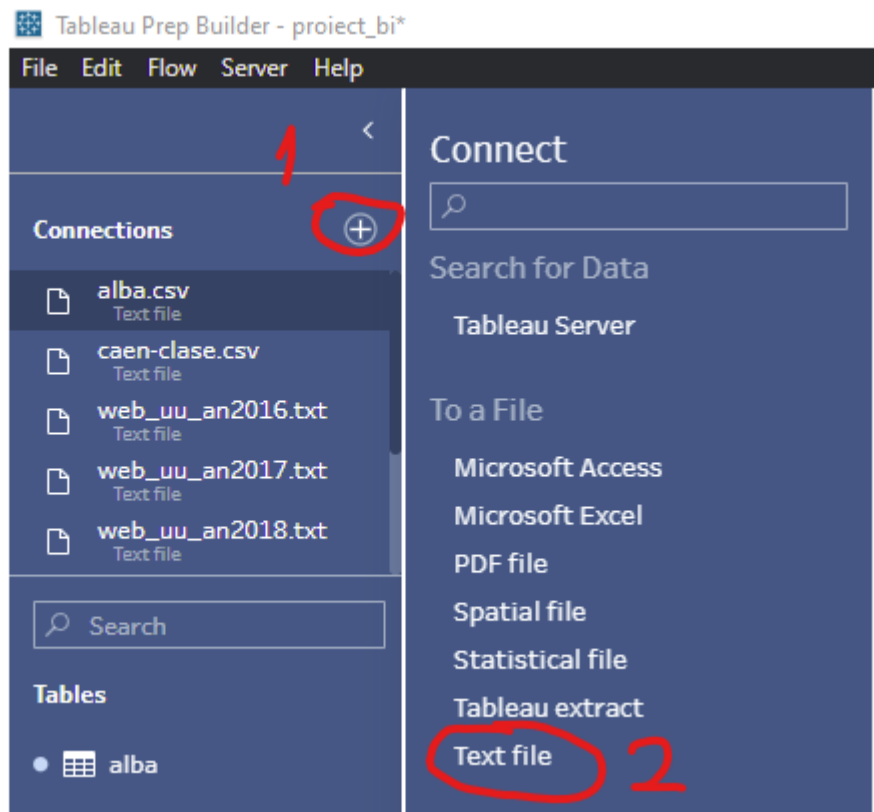
Perioada de referinta este 2016-2020, au fost descarcate cele mai recente fisiere, anul 2020 fiind ultimul disponibil. In aceste fisiere coloanele au fost denumite generic (i1, i2, i3, etc). Am descarcat si un fisier cu extensia web\_uu\_an2020.csv, care contine legenda coloanelor, folosita ulterior la pasul de curatare pentru a redenumi coloanele.

Pentru fisierul cu codurile caen am importat caen\_db.sql descarcat anterior intr-o baza de date, pe urma am facut export (in format .csv) datelor din tabela caen\_clase. Alternativ se putea face o conexiune direct in tableau catre baza de date mysql, dupa descarcarea pluginului ODBC, insa am considerat ca este mai eficient sa fac un export si sa opresc baza de date ulterior, fiind nevoie doar de acel tabel.

## Conectarea la seturile de date

Pentru a conecta seturile de date am folosit software-ul Tableau Prep Builder si am incarcat diferitele surse de date mentionate mai sus:

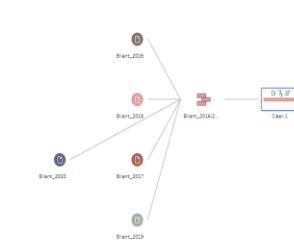
1. Situatiile financiare
2. Lista companiilor din judetul Alba
3. Codurile CAEN



## Curatare, transformare si calculare a datelor

Dupa ce am incarcat toate datele mentionate la punctul anterior, am trecut la urmatoarul pas in procesul de analiza datelor: curatare, transformare si calculare a datelor:

1. Pentru situatiile financiare am creat un Union, denumit Bilant\_2016-2020 in care am inclusiv toate cele 5 tabele aferente anilor 2016-2020. Ulterior am adaugat un pas de curatare in care am efectuat urmatoarele:
  - Redenumirea tuturor coloanelor format iX folosindu-ma de legenda coloanelor mentionata mai sus
  - Redenumirea coloanei „Tablename” in „An”
  - Stergerea literelor si a semnelor de punctuatie din coloana „An”
  - Tipul de date pentru CUI number -> string
  - Tipul de date pentru CAEN number -> string

Changes (26)	As	CUI	CAEN	Active localizate...	Active circulante...	Stocuri	Contante	Casa si conturi la b...	Cheltuieli in avans	Debitori	Venturi in avans	Previsione
Renam Field (Date in localizate Total)	2019	127,524	2011	127,524	5,963	18,054	113,517	null	12,355	null	null	null
Renam Field (Date in localizate Total)	2019	137,617,96	2011	142,833	24,007	null	3,852	25,485	null	10,840	null	null
Renam Field (Date in localizate Total)	2019	3052,0869	2011	null	92,858	null	61,766	31,092	null	57,999	null	null
Renam Field (Date in localizate Total)	2019	29408073	2011	231,108	479	null	null	479	null	18,758	198,108	null
Renam Field (Date in localizate Total)	2019	19000227	2011	4,364	389,242	27,774	117,186	24,313	null	105,253	null	null
Renam Field (Date in localizate Total)	2019	10800774	2011	1,494,284	14,028	5,997	5,108	1,871	96,628	476,682	null	null
Renam Field (Date in localizate Total)	2019	22800293	2011	null	2	null	null	2	null	5,052	null	null
Renam Field (Date in localizate Total)	2019	36200172	2011	null	287,367	null	16,608	270,767	null	5,529	null	null
Renam Field (Date in localizate Total)	2019	7540820	2011	13,526	2,059,340	null	66,539	1,992,801	null	205,425	null	null
Renam Field (Date in localizate Total)	2019	36207118	2011	null	26,477	null	134	26,343	null	5	null	null
Renam Field (Date in localizate Total)	2019	26200173	2011	null	765	null	765	null	1,750	null	null	null
Renam Field (Date in localizate Total)	2019	3544038	2011	null	7,375	null	79	7,296	null	1,628	null	null
Renam Field (Date in localizate Total)	2019	24840896	2011	3,033	2,352	1,000	359	803	null	9,206	null	null
Renam Field (Date in localizate Total)	2019	32967670	2011	null	5,484	31	-1,000	6,483	null	14,680	null	null
Renam Field (Date in localizate Total)	2019	22208399	2011	342,649	24,489	null	23,932	137	null	34,955	122,797	null
Renam Field (Date in localizate Total)	2019	41208584	2011	18,462	185,624	null	47,223	57,311	null	14,768	107,979	null
Renam Field (Date in localizate Total)	2019	15481440	2011	1,267,781	2,461,782	1,005,470	1,011,946	365,366	4,797	2,879,399	44,776	null
Renam Field (Date in localizate Total)	2019	35408429	2011	null	685,772	null	180,887	424,836	null	98,939	null	null
Renam Field (Date in localizate Total)	2019	36308217	2011	9,865	48,188	527	48,053	888	null	89,126	null	null
Renam Field (Date in localizate Total)	2019	36204036	2011	218,750	3,129,913	null	837,871	2,292,042	null	265,728	null	null
Renam Field (Date in localizate Total)	2019	20100140	2011	null	77,682	781	38,766	42,196	null	63,947	null	null
Renam Field (Date in localizate Total)	2019	13388877	2011	-12,433	15,983	1,842	1,859	11,712	4,991	113,750	null	null
Renam Field (Date in localizate Total)	2019	36740227	2011	503,129	1,208,701	null	567,046	641,355	2,300	110,647	null	null

2. Companii judet: Pentru prelucrarea datelor din fisierul Firme\_Alba am creat un pas de agregare pentru cod fiscal, nume, tva, data\_stare, stare, loc si sfarsit, ulterior intr-un pas de curatare am redenumit coloana „cod fiscal” in „CUI” si i-am schimbat tipul de date de la number -> string.

Clean 2 6 Fields 85K rows Filter Values... Rename Fields... Create Calculated Field...

Changes (2)

- Change Type [CUI] To String type
- Rename Field [CUI] From [cod\_fiscal] to [CUI]

CUI	nume	tva	sfasrit	data_stare	stare
10007782	"VASIU, FLORIAN & AS...	01-01-1990			
10007790	GRĂDINIȚA CU PROGR...	01-01-1992			
10007804	CABINET INDIVIDUAL ...	01-01-1993			
10007812	ȚARAN IOAN PERSONA...	01-01-1994			
10007820	ȚARAN OANA EMANUE...	01-01-1995			
10007839	ȚERBAN VALERIA PERS...	01-01-1996			
10007847	ȚEFAN ȚEFAN "ANA"...	01-01-1997			
10007855	" ASOCIAȚIA DE PARIN...	01-01-1998			
10007863	" ASOCIAȚIA MICUL IN...	01-01-1999			
10007871	" ASOCIAȚIA CRESCATO...	01-01-2000			
10007880	" ASOCIAȚIA DACII DIN...	01-01-2001			
10007898	" ASOCIAȚIA EU - RO DI...	01-01-2002			
11689688	ANTON CRISTINA NICOLETA ASOC FAM CRISDOR	NU	13 August 2000	13 August 2000	RADIERE
14629320	CMC PRAXIS SRL	NU	null	09 Mai 2002	INREGISTRAT
36508256	MAX LOADS SRL	NU	01 Martie 2019	01 Martie 2019	RADIERE
37492859	CREATIVE FRAME FACTORY SRL	NU	null	03 Mai 2017	INREGISTRAT
23718230	POLIȚIA MUNICIPIULUI SEBEȘ	NU	null	14 Aprilie 2008	MODIFICARE PUBLICI
31286078	FLOREA PARTENIE PERSONĂ FIZICĂ AUTORIZATĂ	NU	28 Septembrie 2016	28 Septembrie 2016	RADIERE
9954049	INTERNATIONAL TRANSPORT GEROM S.R.L.	NU	08 Februarie 2007	08 Februarie 2007	RADIERE
8242611	MAHA	NU	01 Iulie 2002	01 Iulie 2002	RADIERE
14179012	MICHAEL & KEVIN S.R.L.	NU	01-10-2001	14 Septembrie 2001	INREGISTRAT
13616151	C.A.R. REGIONALA GAZ METAN	NU	null	22 Decembrie 2000	INREGISTRAT

### 3. Ulterior am facut un join intre datele din Bilant\_2016-2020 si Firme\_Alba:

Join Bilant-Firme-Alba 12 Fields 1.03M rows Filter Values... Create Calculated Field...

Settings

Applied Join Clauses

Join Type: Inner

Join Clause: CUI

Summary of Join Results

Join Clause Recommendations

Join Clause: CUI

Join Clause: CUI

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Join Bilant Firme CAEN - 62 rows, 100 rows

Settings: Applied Join Classes: Join Bilant Firme - CAEN, CAEN

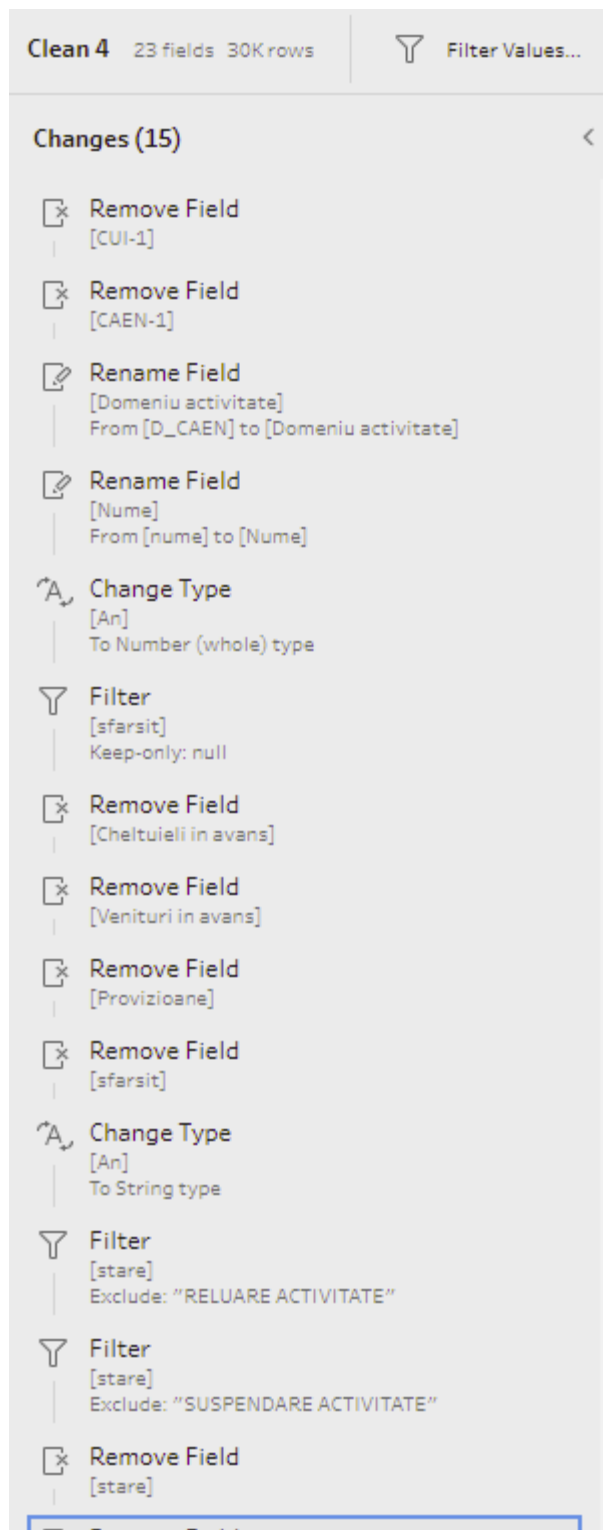
Join Type: Inner

Summary of Join Results: Included: 36,820, Excluded: 0, Class 3: 142, 173, 36,820

Join Class Recommendations: CAEN, D\_CAEN

Join Results:

An	CAEN	D_CAEN	name	trsa	efect	data_start	stare	CAEN	CAEN	Active Imobilizate	Total	Active circulante	Total	Decont	Class	
2016	1011	1011	Activity are agerita...	00000070		01-01-1990		007							01 April 1994	DI COLARE FAI
2017	1012	1012	Activity are agerita...	00000080		01-01-1990									01 April 1997	IMBROSPRE
2018	1013	1013	Activity are agerita...	00000090		01-01-1994									01 April 2017	IMBROSPRE
2019	1014	1014	Activity are agerita...	00000100		01-01-1994									01 April 2018	IMBROSPRE
2020	1015	1015	Activity are agerita...	00000110		01-01-1994									01 April 2019	IMBROSPRE
2021	1016	1016	Activity are agerita...	00000120		01-01-1994									01 April 2020	IMBROSPRE
2022	1017	1017	Activity are agerita...	00000130		01-01-1994									01 April 2021	IMBROSPRE
2023	1018	1018	Activity are agerita...	00000140		01-01-1994									01 April 2022	IMBROSPRE
2024	1019	1019	Activity are agerita...	00000150		01-01-1994									01 April 2023	IMBROSPRE
2025	1020	1020	Activity are agerita...	00000160		01-01-1994									01 April 2024	IMBROSPRE
2026	1021	1021	Activity are agerita...	00000170		01-01-1994									01 April 2025	IMBROSPRE
2027	1022	1022	Activity are agerita...	00000180		01-01-1994									01 April 2026	IMBROSPRE
2028	1023	1023	Activity are agerita...	00000190		01-01-1994									01 April 2027	IMBROSPRE
2029	1024	1024	Activity are agerita...	00000200		01-01-1994									01 April 2028	IMBROSPRE
2030	1025	1025	Activity are agerita...	00000210		01-01-1994									01 April 2029	IMBROSPRE
2031	1026	1026	Activity are agerita...	00000220		01-01-1994									01 April 2030	IMBROSPRE
2032	1027	1027	Activity are agerita...	00000230		01-01-1994									01 April 2031	IMBROSPRE
2033	1028	1028	Activity are agerita...	00000240		01-01-1994									01 April 2032	IMBROSPRE
2034	1029	1029	Activity are agerita...	00000250		01-01-1994									01 April 2033	IMBROSPRE
2035	1030	1030	Activity are agerita...	00000260		01-01-1994									01 April 2034	IMBROSPRE
2036	1031	1031	Activity are agerita...	00000270		01-01-1994									01 April 2035	IMBROSPRE
2037	1032	1032	Activity are agerita...	00000280		01-01-1994									01 April 2036	IMBROSPRE
2038	1033	1033	Activity are agerita...	00000290		01-01-1994									01 April 2037	IMBROSPRE
2039	1034	1034	Activity are agerita...	00000300		01-01-1994									01 April 2038	IMBROSPRE
2040	1035	1035	Activity are agerita...	00000310		01-01-1994									01 April 2039	IMBROSPRE
2041	1036	1036	Activity are agerita...	00000320		01-01-1994									01 April 2040	IMBROSPRE
2042	1037	1037	Activity are agerita...	00000330		01-01-1994									01 April 2041	IMBROSPRE
2043	1038	1038	Activity are agerita...	00000340		01-01-1994									01 April 2042	IMBROSPRE
2044	1039	1039	Activity are agerita...	00000350		01-01-1994									01 April 2043	IMBROSPRE
2045	1040	1040	Activity are agerita...	00000360		01-01-1994									01 April 2044	IMBROSPRE
2046	1041	1041	Activity are agerita...	00000370		01-01-1994									01 April 2045	IMBROSPRE
2047	1042	1042	Activity are agerita...	00000380		01-01-1994									01 April 2046	IMBROSPRE
2048	1043	1043	Activity are agerita...	00000390		01-01-1994									01 April 2047	IMBROSPRE
2049	1044	1044	Activity are agerita...	00000400		01-01-1994									01 April 2048	IMBROSPRE
2050	1045	1045	Activity are agerita...	00000410		01-01-1994									01 April 2049	IMBROSPRE
2051	1046	1046	Activity are agerita...	00000420		01-01-1994									01 April 2050	IMBROSPRE
2052	1047	1047	Activity are agerita...	00000430		01-01-1994									01 April 2051	IMBROSPRE
2053	1048	1048	Activity are agerita...	00000440		01-01-1994									01 April 2052	IMBROSPRE
2054	1049	1049	Activity are agerita...	00000450		01-01-1994									01 April 2053	IMBROSPRE
2055	1050	1050	Activity are agerita...	00000460		01-01-1994									01 April 2054	IMBROSPRE
2056	1051	1051	Activity are agerita...	00000470		01-01-1994									01 April 2055	IMBROSPRE
2057	1052	1052	Activity are agerita...	00000480		01-01-1994									01 April 2056	IMBROSPRE
2058	1053	1053	Activity are agerita...	00000490		01-01-1994									01 April 2057	IMBROSPRE
2059	1054	1054	Activity are agerita...	00000500		01-01-1994									01 April 2058	IMBROSPRE
2060	1055	1055	Activity are agerita...	00000510		01-01-1994									01 April 2059	IMBROSPRE
2061	1056	1056	Activity are agerita...	00000520		01-01-1994									01 April 2060	IMBROSPRE
2062	1057	1057	Activity are agerita...	00000530		01-01-1994									01 April 2061	IMBROSPRE
2063	1058	1058	Activity are agerita...	00000540		01-01-1994									01 April 2062	IMBROSPRE
2064	1059	1059	Activity are agerita...	00000550		01-01-1994									01 April 2063	IMBROSPRE
2065	1060	1060	Activity are agerita...	00000560		01-01-1994									01 April 2064	IMBROSPRE
2066	1061	1061	Activity are agerita...	00000570		01-01-1994									01 April 2065	IMBROSPRE
2067	1062	1062	Activity are agerita...	00000580		01-01-1994									01 April 2066	IMBROSPRE
2068	1063	1063	Activity are agerita...	00000590		01-01-1994									01 April 2067	IMBROSPRE
2069	1064	1064	Activity are agerita...	00000600		01-01-1994									01 April 2068	IMBROSPRE
2070	1065	1065	Activity are agerita...	00000610		01-01-1994									01 April 2069	IMBROSPRE
2071	1066	1066	Activity are agerita...	00000620		01-01-1994									01 April 2070	IMBROSPRE
2072	1067	1067	Activity are agerita...	00000630		01-01-1994									01 April 2071	IMBROSPRE
2073	1068	1068	Activity are agerita...	00000640		01-01-1994									01 April 2072	IMBROSPRE
2074	1069	1069	Activity are agerita...	00000650		01-01-1994									01 April 2073	IMBROSPRE
2075	1070	1070	Activity are agerita...	00000660		01-01-1994									01 April 2074	IMBROSPRE
2076	1071	1071	Activity are agerita...	00000670		01-01-1994									01 April 2075	IMBROSPRE
2077	1072	1072	Activity are agerita...	00000680		01-01-1994									01 April 2076	IMBROSPRE
2078	1073	1073	Activity are agerita...	00000690		01-01-1994									01 April 2077	IMBROSPRE
2079	1074	1074	Activity are agerita...	00000700		01-01-1994									01 April 2078	IMBROSPRE
2080	1075	1075	Activity are agerita...	00000710		01-01-1994									01 April 2079	IMBROSPRE
2081	1076	1076	Activity are agerita...	00000720		01-01-1994									01 April 2080	IMBROSPRE
2082	1077	1077	Activity are agerita...	00000730		01-01-1994									01 April 2081	IMBROSPRE
2083	1078	1078	Activity are agerita...	00000740		01-01-1994									01 April 2082	IMBROSPRE
2084	1079	1079	Activity are agerita...	00000750		01-01-1994									01 April 2083	IMBROSPRE
2085	1080	1080	Activity are agerita...	00000760		01-01-1994									01 April 2084	IMBROSPRE
2086	1081	1081	Activity are agerita...	00000770		01-01-1994									01 April 2085	IMBROSPRE
2087	1082	1082	Activity are agerita...	00000780		01-01-1994									01 April 2086	IMBROSPRE
2088	1083	1083	Activity are agerita...	00000790		01-01-1994									01 April 2087	IMBROSPRE
2089	1084	1084	Activity are agerita...	00000800		01-01-1994									01 April 2088	IMBROSPRE
2090	1085	1085	Activity are agerita...	00000810		01-01-1994									01 April 2089	IMBROSPRE
2091	1086	1086	Activity are agerita...	00000820		01-01-1994									01 April 2090	IMBROSPRE
2092	1087	1087	Activity are agerita...	00000830		01-01-1994									01 April 2091	IMBROSPRE
2093	1088	1088	Activity are agerita...	00000840		01-01-1994									01 April 2092	IMBROSPRE
2094	1089	1089	Activity are agerita...	00000850		01-01-1994									01 April 2093	IMBROSPRE
2095	1090	1090	Activity are agerita...	00000860		01-01-1994									01 April 2094	IMBROSPRE
2096	1091	1091	Activity are agerita...	00000870		01-01-1994									01 April 2095	IMBROSPRE
2097	1092	1092	Activity are agerita...	00000880		01-01-1994										



In urma celor describe mai sus a rezultat urmatorul flux:





In urma executarii acestui flow a rezultat un fisier cu 25 de coloane si 35820 de randuri.

## Analiza datelor

Pentru a analiza datele companiilor din judetul Alba s-au realizat urmatoarele:

- Campuri calculate pentru profitul net (maxim si minim) pe toata perioada 2016-2020:
  - MaxProfitNet / MinProfitNet

ProfitNet-Maxim

IF {  
   FIXED [Domeniu activitate]:MAX([An])} = [An]  
 THEN [Profit net] END

ProfitNet-Minim

IF {  
   FIXED [Domeniu activitate]:MIN([An])} = [An]  
 THEN [Profit net] END

- Profit minim vs maxim, atat valoric cat si procentual

---

$$\text{SUM}([\text{ProfitNet-Maxim}]) - \text{SUM}([\text{ProfitNet-Minim}])$$

---

$$\text{SUM}([\text{ProfitNet-Maxim}]) / \text{SUM}([\text{ProfitNet-Minim}]) - 1$$

- Parametrii calculati care ne vor ajuta in realizarea unui top 10 cele mai profitabile companii/domenii:
  - Crearea parametrului top 10:

Edit Parameter [Top10]
 ×

Name:

Properties
 

Data type:
 

Integer

Current value:
 

10

Value when workbook opens:
 

Current value

Display format:
 

10

Allowable values:
 

☒ All
 ☐ List
 ☐ Range

- Crearea campului calculat Top 10 domenii profitabile:

Top-10-Domenii

Results are computed along Table (across).

```
IF RANK_UNIQUE([ProfitMaxLowDif]) <=[Top10]
  THEN ATTR([Domeniu activitate]) ELSE NULL END
```

- Crearea campului calculat Top 10 companii profitabile

Top-10-Companii

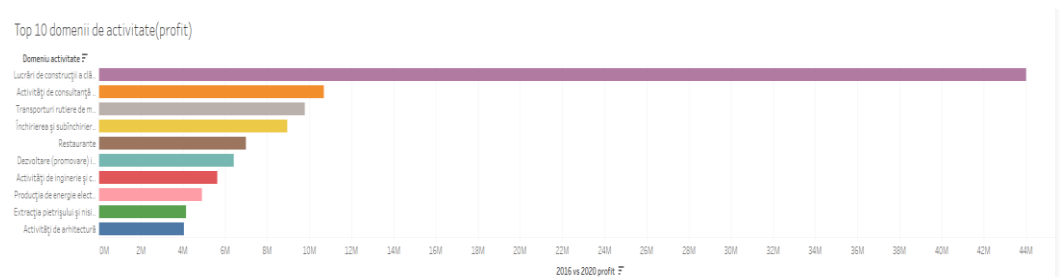
Results are computed along Table (across).

```
IF RANK_UNIQUE([Profit growth 2016-2020]) <=[Top10]
  THEN ATTR([Nume]) ELSE NULL END
```

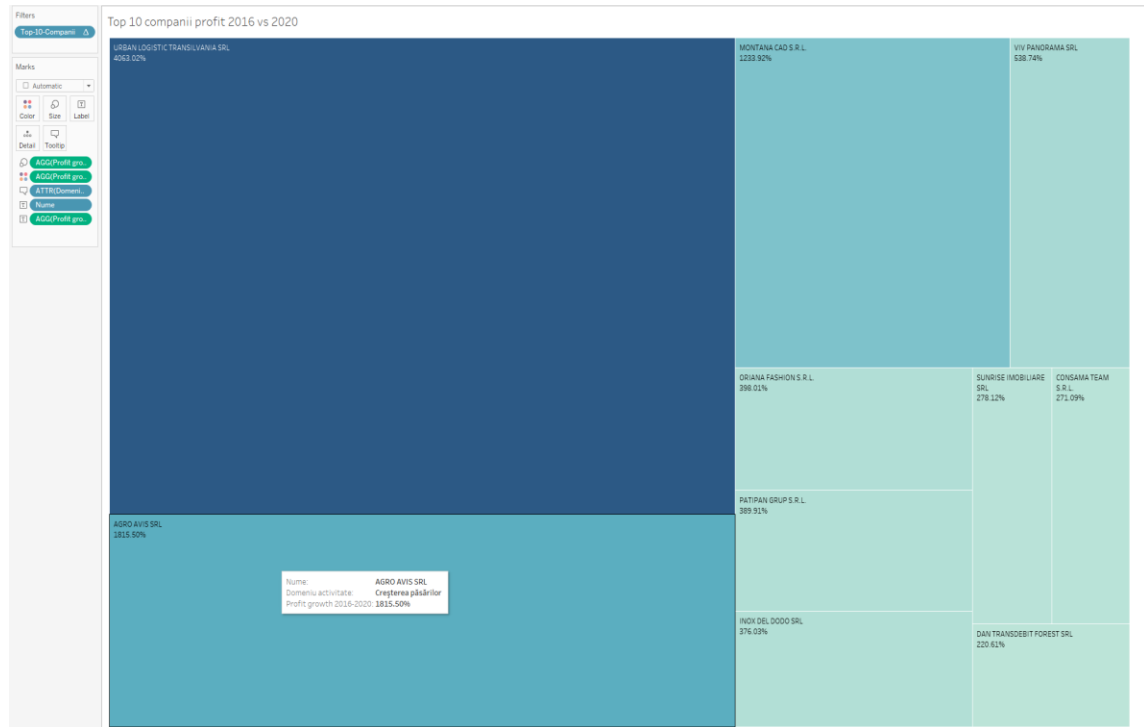
## Crearea graficelor

Pentru reprezentarea rezultatelor prin intermediul graficelor am ales sa prezentam:

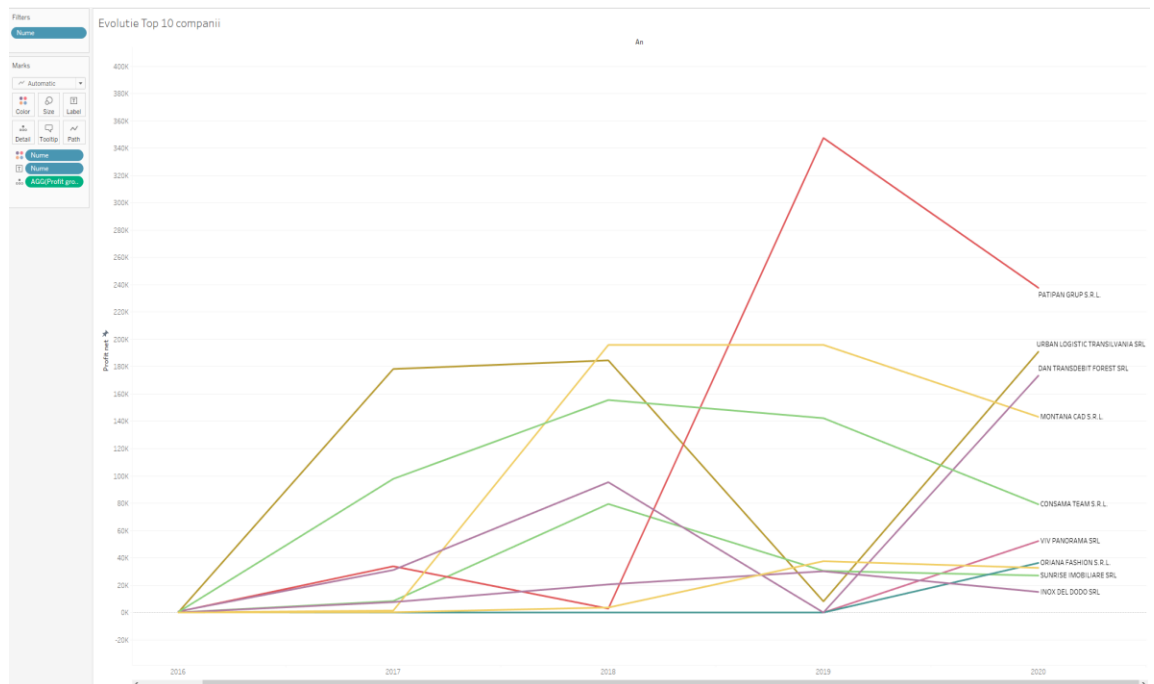
- Top 10 domenii min vs max profit:



- Top 10 companii profit 2016 vs profit 2020:



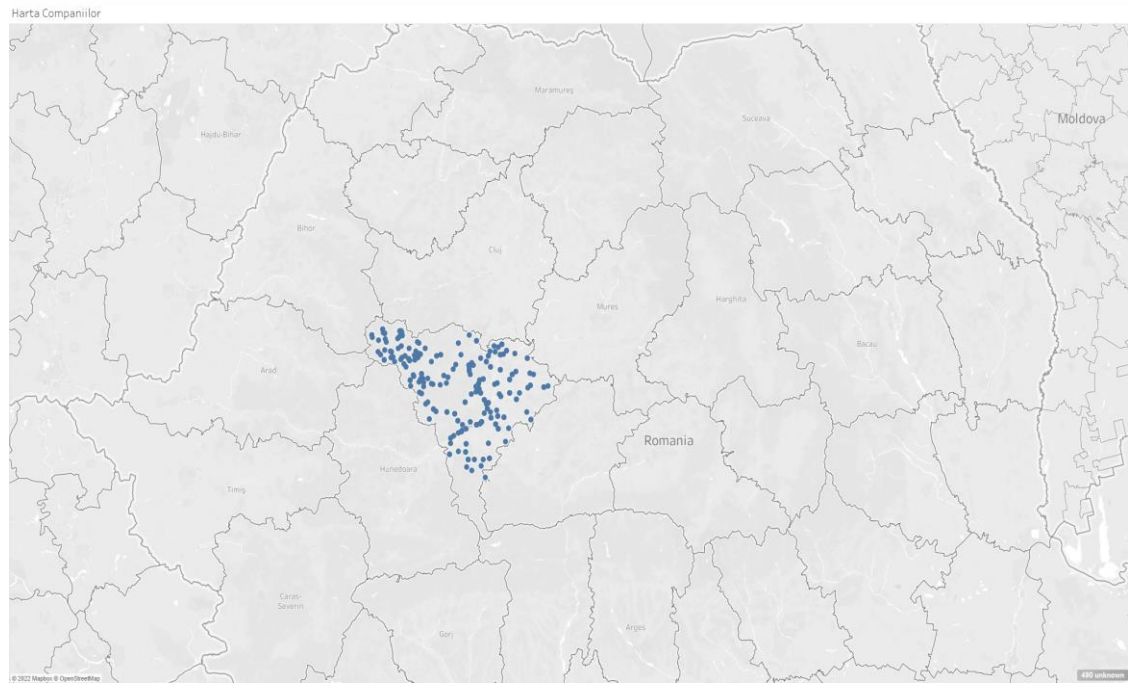
- Reprezentarea grafica in timp a rezultatelor inregistrate de companiile respective între 2016 si 2020:



Se poate observa faptul ca Patipan Grup SRL are profituri mult mai mari decat Urban Logistic Transilvania, insa motivul pentru care anterior nu a fost pe locul 1 este ca nu a inregistrat o crestere procentuala la fel de mare comparativ cu Urban Logistic Grup Transilvania SRL.

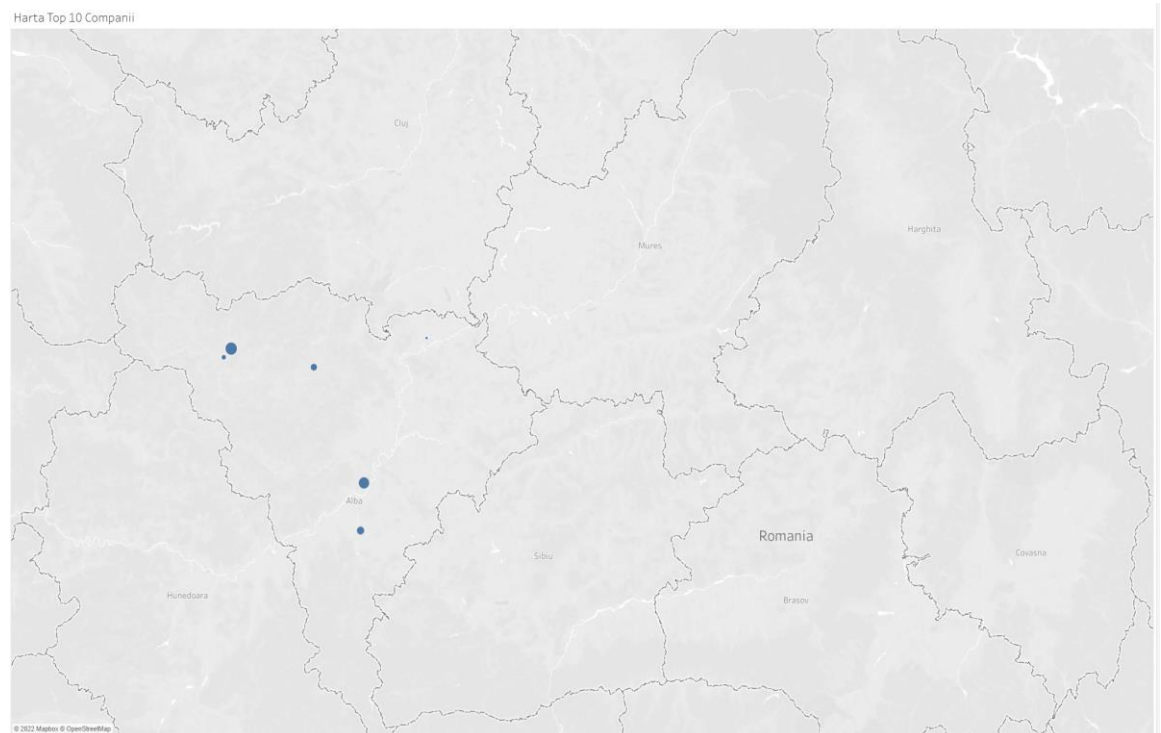
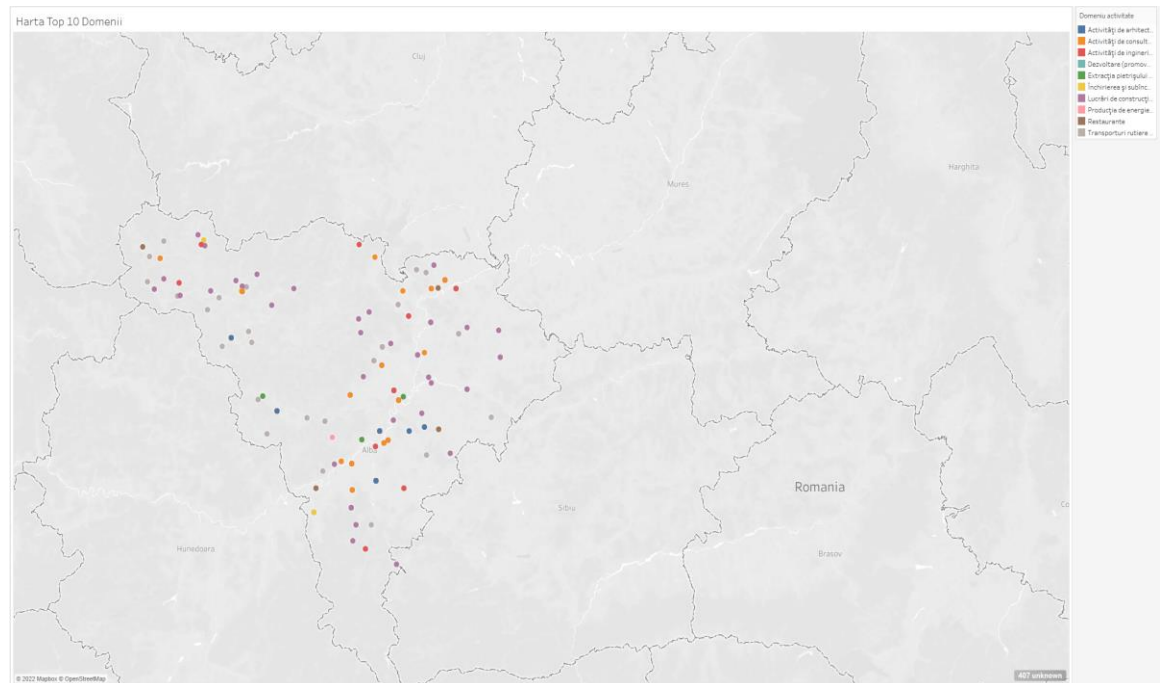
- Reprezentarea geografica:

Pentru a genera o harta corecta a fost nevoie de un import custom geocoding, dat fiind faptul ca Tableau nu cunoaste majoritatea localitatilor din judetul Alba, dupa import harta cu locatia firmelor din judetul Alba arata astfel:



Pentru a obtine Geocodes am facut un script in Python, care preia datele din fisierul alba.csv si cauta coordonatele geografice ale localitatilor pe

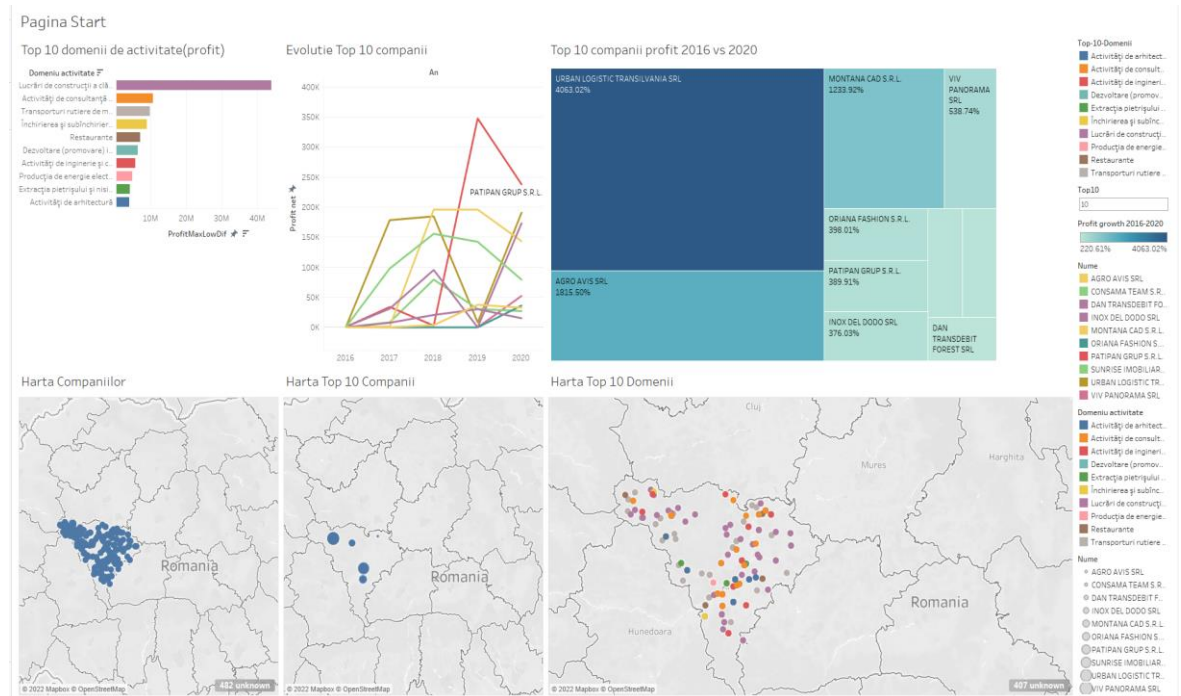
<https://locationiq.com/>



O buna parte din companii se afla in Alba Iulia si Bistrita

## Dashboard

Am creat un dashboard intitulat „Pagina Start”, care ofera un rezumat a tot ce s-a realizat in cadrul acestui studiu:



## Story

In ultima etapa a proiectului am creat si un story care sa contina cele mentionate mai sus:

Analiza Judet Alba

<	Localizarea companiilor judet Alba	Top 10 domenii profitabile in judetul Alba	Localizare Top 10 Domenii	Top 10 companii profitabile din judetul Alba	Evolutie Top 10 companii 2016-2020	Localizare Top 10 Companii	>
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