Visualizing the

Bureau of Labor Statistics Employment Dataset

by

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Outline

.Understanding the Dataset
.Data Preparation
.Visualizations
.Issues

Understanding the Dataset

as dimensions and measures

.Raw data at ftp://ftp.bls.gov/pub/special.requests/cew/
.Covers Time from 1990 to 2007
    . Data for years, quarters, and months
.Covers Space for all US States
    . Data for States and Counties
.Covers the NAICS Industry hierarchy
.Covers Ownership
    . Government (Federal, State, Local) and Private
.Contains measures employment, annual pay, total wages, and number of establishments (among others)

NAICS

North American Industry Classification System

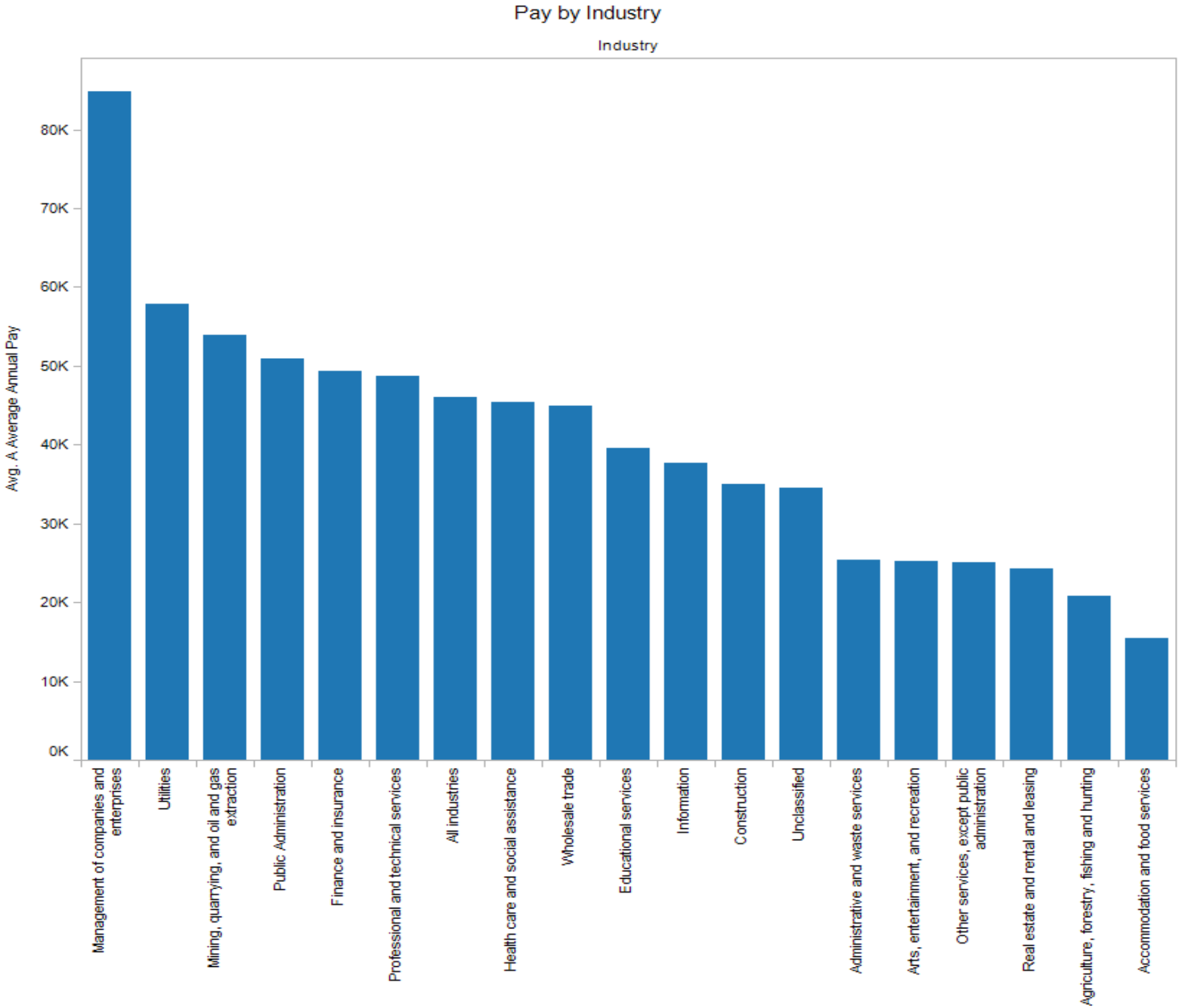
.11 Agriculture, Forestry,
.111 Crop Production
.1111 Oilseed and
.11111 Soybean F
.111110 Soyb
.11112 Oilseed (e
Farming
.111120 Oilse
Farming
.11113 Dry Pea a
.111130 Dry P
.11114 Wheat Far
.111140 Wheat Farming

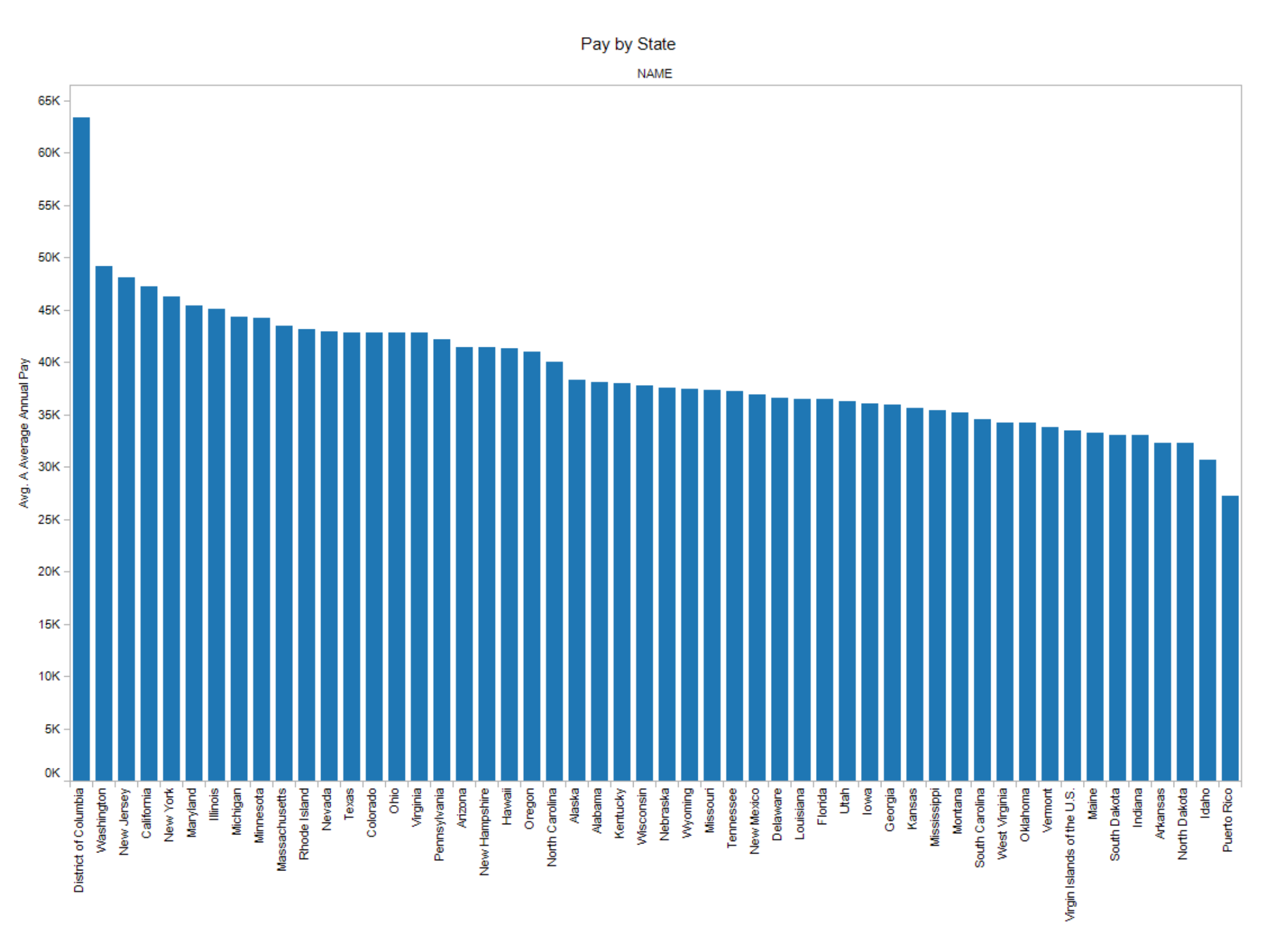
Industry
Accommodation and food services
Administrative and waste services
Agriculture, forestry, fishing and hunting
All industries
Arts, entertainment, and recreation
Construction
Educational services
Finance and insurance
Health care and social assistance
Information
Management of companies and enterprises
Mining, quarrying, and oil and gas extraction
Other services, except public administration
Professional and technical services
Public Administration
Real estate and rental and leasing
Unclassified
Utilities
Wholesale trade

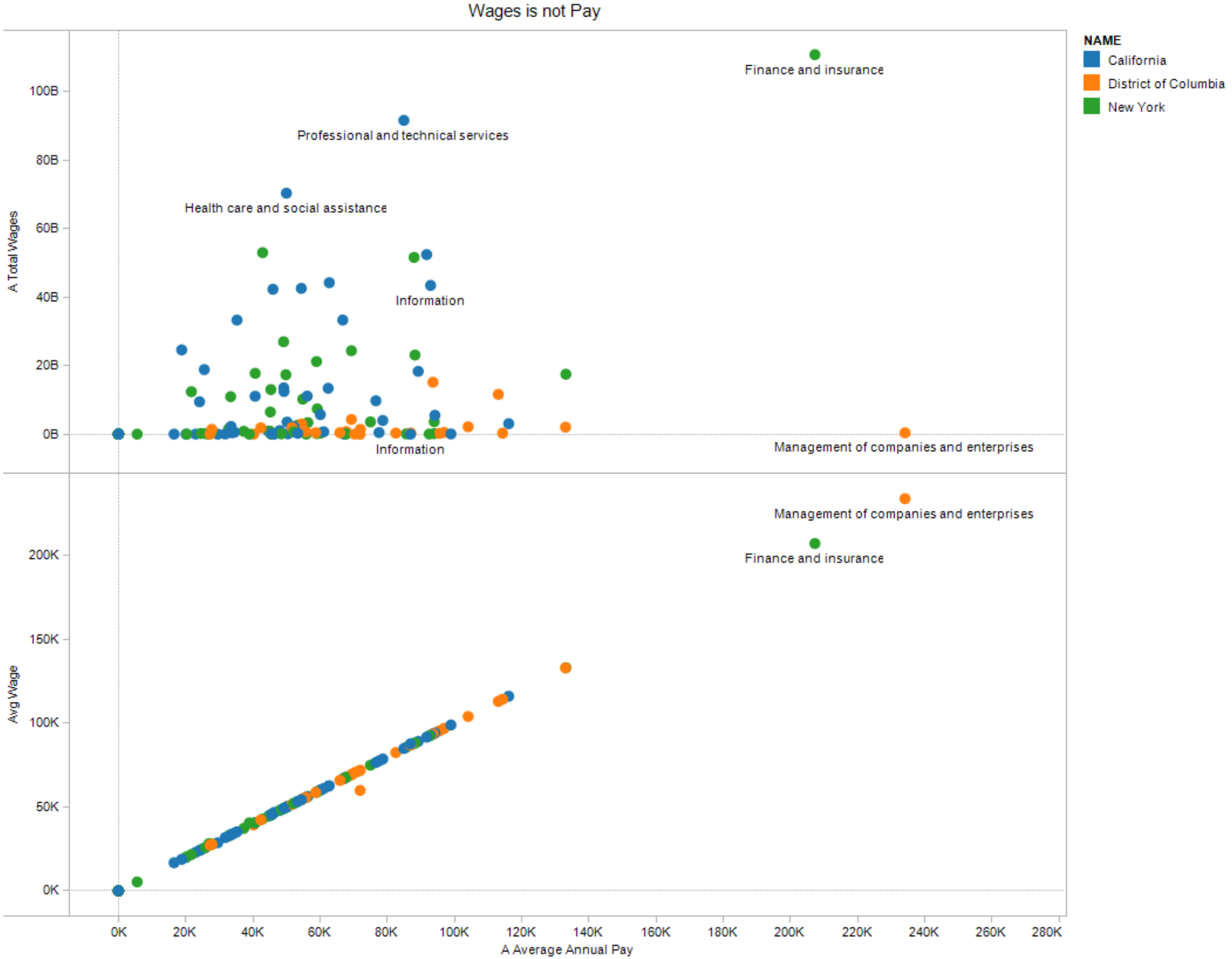
Data Preprocessing

- We wrote **shell scripts** to
  - **Download** all raw data files via FTP
  - **Parse** the raw data files (BLS fixed width format)
  - **Import** the raw data files into a MySQL database
- We **manually** imported tables mapping
  - BLS “Area Code” → state name
  - BLS “Area Code” → state abbreviation
    - Necessary for using Tableau's map feature
  - NAICS code → industry name
  - BLS Ownership code → ownership name

Visualizations


Pay by Industry
Industry
Avg. A Average Annual Pay
80K
70K
60K
50K
40K
30K
20K
10K
0K
Management of companies and enterprises
Utilities
Mining, quarrying, and oil and gas extraction
Public Administration
Finance and insurance
Professional and technical services
All industries
Health care and social assistance
Wholesale trade
Educational services
Information
Construction
Unclassified
Administrative and waste services
Arts, entertainment, and recreation
Other services, except public administration
Real estate and rental and leasing
Agriculture, forestry, fishing and hunting
Accommodation and food services


Pay by State
NAME
Avg. A Average Annual Pay
65K
60K
55K
50K
45K
40K
35K
30K
25K
20K
15K
10K
5K
0K
District of Columbia
Washington
New Jersey
California
New York
Maryland
Illinois
Michigan
Minnesota
Massachusetts
Rhode Island
Nevada
Texas
Colorado
Ohio
Virginia
Pennsylvania
Arizona
New Hampshire
Hawaii
Oregon
North Carolina
Alaska
Alabama
Kentucky
Wisconsin
Nebraska
Wyoming
Missouri
Tennessee
New Mexico
Delaware
Louisiana
Florida
Utah
Iowa
Georgia
Kansas
Mississippi
Montana
South Carolina
West Virginia
Oklahoma
Vermont
Virgin Islands of the U.S.
Maine
South Dakota
Indiana
Arkansas
North Dakota
Idaho
Puerto Rico

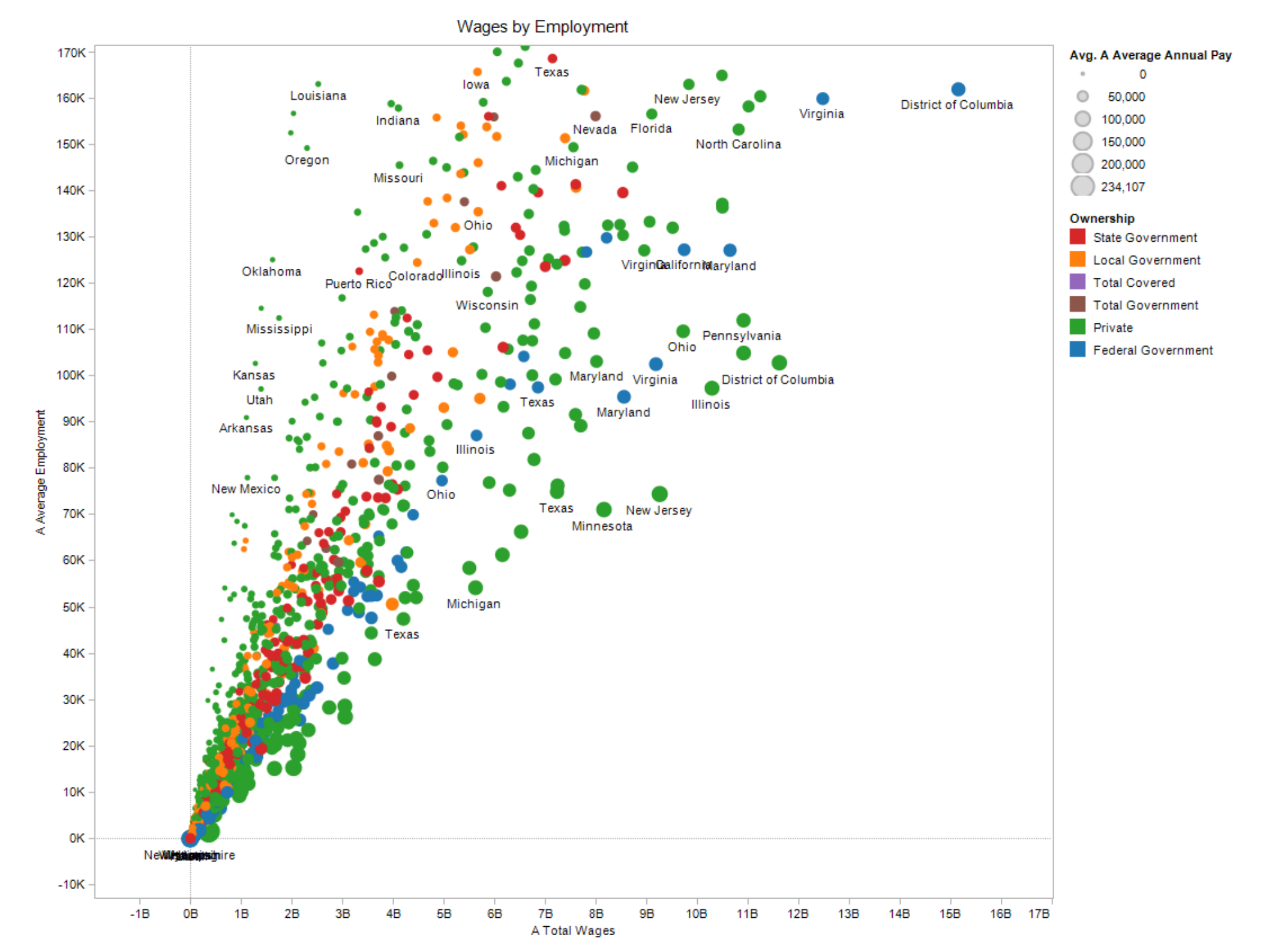

Wages is not Pay
NAME
California
District of Columbia
New York
A Total Wages
100B
80B
60B
40B
20B
0B
Finance and insurance
Professional and technical services
Health care and social assistance
Information
Information
Management of companies and enterprises
Avg Wage
200K
150K
100K
50K
0K
Management of companies and enterprises
Finance and insurance
0K
20K
40K
60K
80K
100K
120K
140K
160K
180K
200K
220K
240K
260K
280K
A Average Annual Pay

Wages is not Pay

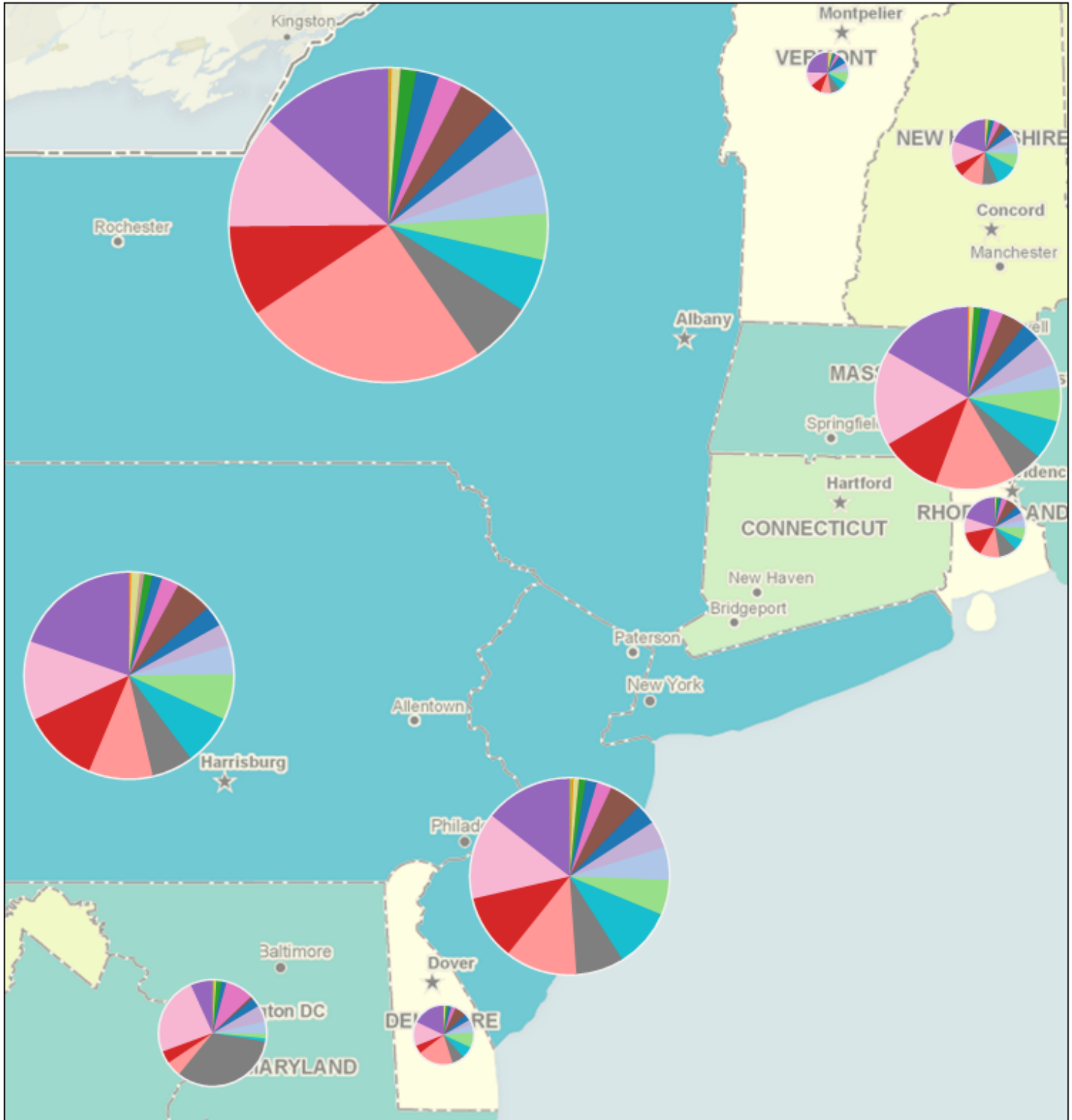
Industry

- Accommodation and food services
- Administrative and waste services
- Agriculture, forestry, fishing and hunting
- Arts, entertainment, and recreation
- Construction
- Educational services
- Finance and insurance
- Health care and social assistance
- Information
- Other services, exceptpublic administrati
- Professional and technical services
- Public Administration
- Real estate and rental and leasing
- Unclassified
- Utilities
- Wholesale trade

A Average Annual Pay vs. A Total Wages and Avg Wage. Color shows details about Industry. The data is filtered on Ownership, which keeps Federal Government, Local Government and State Government. The view is filtered on Industry and NAME. The Industry filter has multiple members selected. The NAME filter keeps California, District of Columbia and New York. The marks are labeled by NAME.


Wages by Employment
A Average Employment
A Total Wages
170K
160K
150K
140K
130K
120K
110K
100K
90K
80K
70K
60K
50K
40K
30K
20K
10K
0K
-10K
-1B
0B
1B
2B
3B
4B
5B
6B
7B
8B
9B
10B
11B
12B
13B
14B
15B
16B
17B
Texas
Iowa
Louisiana
Indiana
New Jersey
Virginia
District of Columbia
Nevada
Florida
North Carolina
Oregon
Michigan
Missouri
Ohio
Oklahoma
Puerto Rico
Colorado
Illinois
Virginia
California
Maryland
Wisconsin
Mississippi
Pennsylvania
Ohio
Kansas
Maryland
Virginia
District of Columbia
Utah
Texas
Maryland
Illinois
Arkansas
Illinois
New Mexico
Ohio
Texas
New Jersey
Minnesota
Michigan
Texas
Avg. A Average Annual Pay
0
50,000
100,000
150,000
200,000
234,107
Ownership
State Government
Local Government
Total Covered
Total Government
Private
Federal Government

New England Pies



A Total Wages

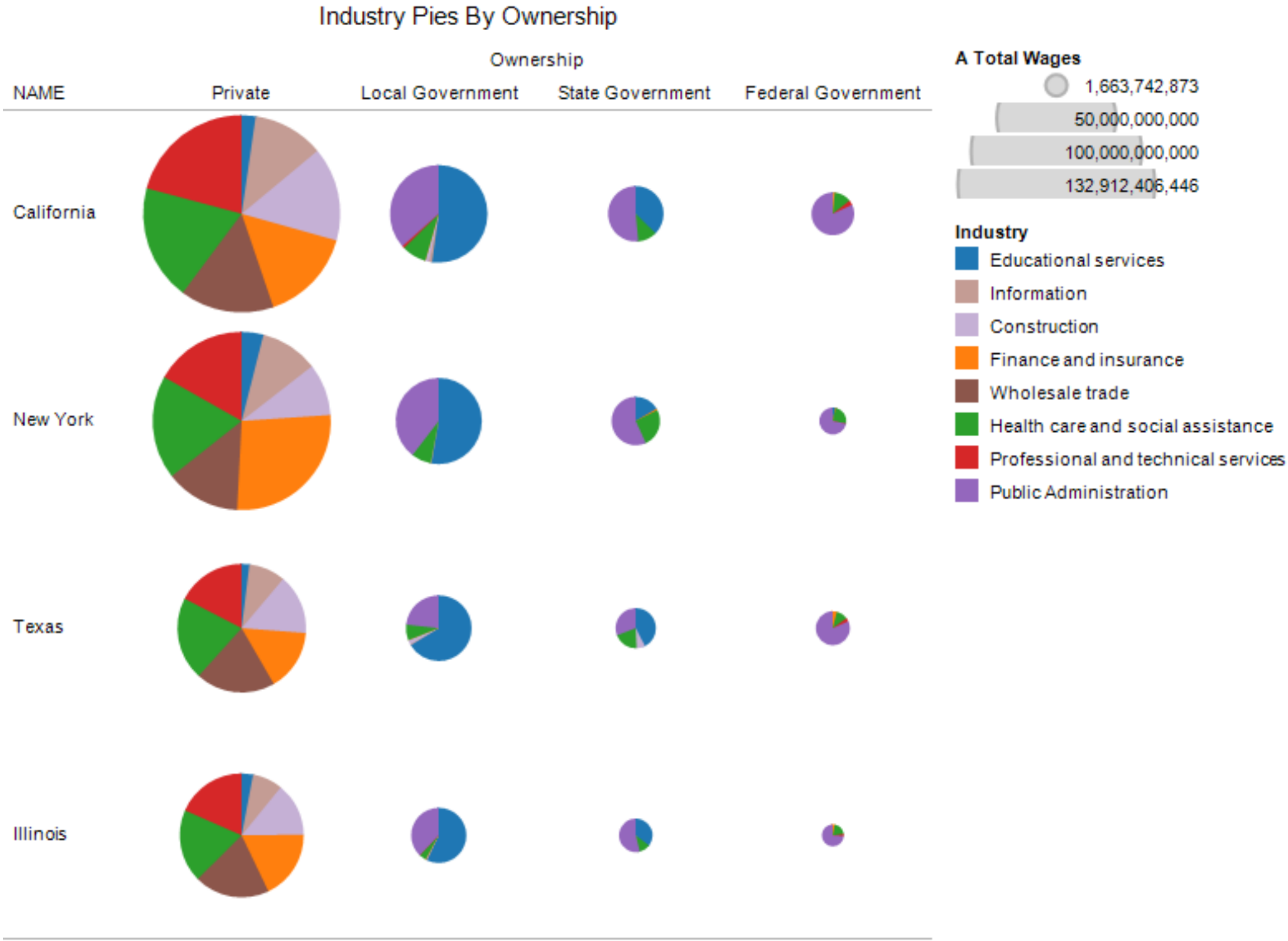
1,068,735,920
200,000,000,000
400,000,000,000
627,437,196,751

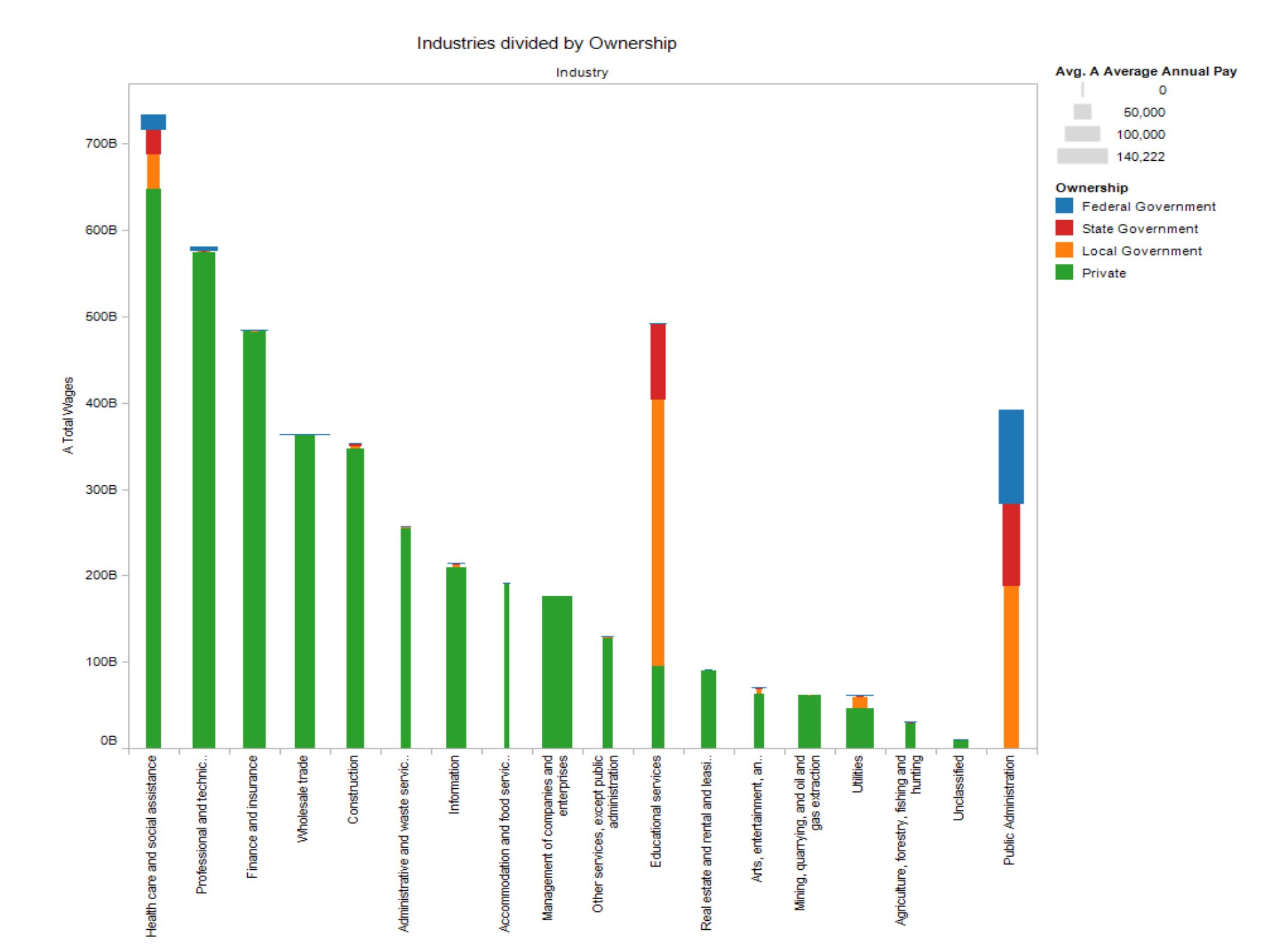
Industry

- Unclassified
- Agriculture, forestry, fishing and hunting
- Utilities
- Mining, quarrying, and oil and gas extraction
- Arts, entertainment, and recreation
- Real estate and rental and leasing
- Other services, except public administration
- Management of companies and enterprises
- Accommodation and food services
- Information
- Administrative and waste services
- Construction
- Wholesale trade
- Public Administration
- Finance and insurance
- Educational services
- Professional and technical services
- Health care and social assistance

2007 Population

- 514,000 to 1,320,000
- 1,320,000 to 2,940,000
- 2,940,000 to 5,180,000
- 5,180,000 to 8,780,000
- 8,780,000 to 37,100,000


Industry Pies By Ownership
Ownership
NAME
Private
Local Government
State Government
Federal Government
California
New York
Texas
Illinois
A Total Wages
1,663,742,873
50,000,000,000
100,000,000,000
132,912,406,446
Industry
Educational services
Information
Construction
Finance and insurance
Wholesale trade
Health care and social assistance
Professional and technical services
Public Administration


Industries divided by Ownership
Industry
A Total Wages
700B
600B
500B
400B
300B
200B
100B
0B
Health care and social assistance
Professional and technic..
Finance and insurance
Wholesale trade
Construction
Administrative and waste servic..
Information
Accommodation and food servic..
Management of companies and enterprises
Other services, except public administration
Educational services
Real estate and rental and leasi..
Arts, entertainment, an..
Mining, quarrying, and oil and gas extraction
Utilities
Agriculture, forestry, fishing and hunting
Unclassified
Public Administration
Avg. A Average Annual Pay
0
50,000
100,000
140,222
Ownership
Federal Government
State Government
Local Government
Private

Issues

.No support for hierarchical data cubes
  - With this we could have seen the whole dataset

.County data too large for Tableau (1 min per vis)

.Hierarchical time was (seemingly) impossible
  - Years in different tables, months in different columns
  - Tableau expects each dimension as a single column

.We did not document as we went, had to backtrack

.“Cancel” query in Tableau didn't stop queries

.Overlapping labels occurred often

.(seemingly) impossible to probe with many dimensions

the end.