

# Implementation of Action 6 of the California Sustainable Freight Action Plan (CSFAP) Phase 3: Tracking Economic Competitiveness

Final Report Part 2: Economic  
Competitiveness Metrics Data  
Description and Computations

July 2021

A Research Report from the Pacific Southwest Region  
University Transportation Center

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## About the Pacific Southwest Region University Transportation Center

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The Pacific Southwest Region UTC conducts an integrated, multidisciplinary program of research, education and technology transfer aimed at *improving the mobility of people and goods throughout the region*. Our program is organized around four themes: 1) technology to address transportation problems and improve mobility; 2) improving mobility for vulnerable populations; 3) Improving resilience and protecting the environment; and 4) managing mobility in high growth areas.

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### Disclosure

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## **Abstract**

This report presents the data sources, descriptions, and file structures for computation of the economic competitiveness metrics to be reported annually as part of Action 6 of the California Sustainable Freight Action Plan. The report also includes instructions for computing the metrics and adding to the database as additional years become available. This report is written as an instruction manual. It will be updated as new data sources are discovered, other sub-sectors are selected for separate tracking, or metrics are revised.

# 1. Introduction

This document is a guide for the databases and computations developed for the economic competitiveness metrics, part of Action 6 of the California Sustainable Freight Action Plan. The metrics are based on National Industrial Classification System (NAICS) codes. In the target industries section, we state all industries and their NAICS codes. There are five main industry groups: all carriers (ac), service providers (s), all transportation dependent activities (t), cargo owners (co), and reverse logistics (r).

In the data and metrics section, we summarize all necessary data and metrics. The metrics are organized into three categories: Revenues, Workforce statistics, and GDP. For each component, there are three different comparisons: National Comparison, Trucking Comparison, and Ports Comparison. As per the data source table (in Data and Metrics), 5 data sources are used to generate the metrics. Most sources of employment data do not include the self-employed, yet some freight industry sectors have large numbers of self-employed, for example owner-operators in trucking. We include the self-employed and devise methods for estimating their numbers at the 6-digit NAICS level. These methods are programmed within MySQL procedures.

In the description of all databases and tables section, we illustrate the data structure. Since the NAICS code may change every five years, we generate a new database to store NAICS every five years. For example, we are using 2017\_2021\_naics to produce metrics for 2017, 2018, 2019, 2020, and 2021. In 2022, we need to create another database to store the new NAICS code to produce metrics for the following five years. We develop a new database every five years, whether the NAICS code is changed or not.

For every year, we have two databases: “year\_data”, which stores the original forms from online retrieval and some processed forms; “year\_metrics”, which stores the final processed forms of the data. Computation procedures for creating the processed form of the data are stored in “Stored Procedures.” The second database is called “year\_metrics”, which includes financial performance measures (fpm), workforce statistics (ws), and overall economic performance (oep) for Arizona (az), California (ca), California trucking sectors (catruck), Nevada (nv), United States (usa), and Utah (ut). The “Stored Procedures” has all procedures to automatically calculate financial performance measures (fpm), workforce statistics (ws), and overall economic performance (oep) for all comparison states. Lastly, the “Ports” database stores imports, exports, and the sum of imports and exports data for all comparison states. In addition, we store the ratios of metrics of comparison states over the U.S. in “Views” of every database, and we do not use the “Functions” in databases.

In the implementation section, we describe the implementation steps, how to download data from online, how to do some data cleaning in excel, how to import data to MySQL, and how to implement procedures in MySQL.

Lastly, the “data changes and adjustments” section lists the updates comparing to the previous database and some reminders for future work. For example, as this report is written, the 2019 data is not yet available, so we should check for 2019 data regularly and update it when the data becomes available.

## 2. Target Industries

This section lists all the 6-digit level industry sectors included in the metrics. They are classified into groups based on higher level codes. See Table 1.

**Table 1: Freight industry sectors by group**

<b>1. All Carriers</b>	<b>NAICS</b>
Ocean Carriers-Deep sea freight Transportation	483111
Coastal and great lakes freight transportation	483113
Inland water carriers	483211
Railroads-Shorelines	482112
Classes-line haul-571 Carriers-including passengers	482111
Trucking-General Freight trucking, Local	484110
General Freight trucking, Long distance, truckload	484121
General Freight trucking, Long distance, less than truckload	484122
Curriers/Last mile	491110
Curriers and express delivery	492110
Local messengers and local delivery	492210
Air Transport	481112
Non scheduled chartered air transportation	481212
Pipeline-Oil	486110
Gas	486210
Refined Petroleum Product	486910
All other	486990

<b>2. Reverse Logistics</b>	<b>NAICS</b>
Waste Management	562

<b>3. Service Providers</b>	<b>NAICS</b>
Freight Transportation Arrangement	488510
Port Operators	488310
Marine Cargo Handling	488320
Navigational Services to shipping	488330
Other Support Activities for Water Transportation	488390
Other Airport Operations	488119
Support activities	488190
US postal Service	491110
Parcel Delivery services	492110
Equipment leasing	532120
Warehouse and Distribution	493110
Refrigerated Warehousing and Storage	493120

Farm Product Warehousing and Storage	493130
Other Warehousing and Storage	493190

<b>4. Transportation dependent</b>	<b>NAICS</b>
Communication Equipment Repair and Maintenance	811213
Other Electronic and Precision Equipment Repair and Maintenance	811219
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	811310
Home and Garden Equipment Repair and Maintenance	811411
Appliance Repair and Maintenance	811412
Reupholstery and Furniture Repair	811420
Funeral Homes and Funeral Services	812210
Pet Care (except Veterinary) Services	812910
Environment, Conservation and Wildlife Organizations	813312
Road and infrastructure maintenance	488490
Energy Production	2211

<b>5. Cargo Owners</b>	<b>NAICS</b>
Retail trade	44
Retail trade	45
Wholesaler trade	42
Manufacturing (food, fibers, apparel)	31
Manufacturing (wood, petroleum products, chemicals, aggregates)	32
Manufacturing (goods, machinery)	33
Agriculture	484220

### 3. Data and Metrics

Data for the metrics is drawn from the sources listed in Table 2 below. Table 2 gives short descriptions and notes what is excluded from each data source. The Quarterly Census of Employment and Wages (QCEW) is the main data source; it provides quarterly data for employment and earnings for all employees covered by unemployment insurance. The QCEW data is supplemented with Non-employer Statistics (NES) to account for the self-employed. Bureau of Economic Analysis (BEA) is the only source of annual sector level GDP data, but it is limited to 2-digit sectors. The Economic Census (EC) data are used to expand GDP data to 6-digit sectors. USA Trade is the online source for ports data.



**Table 2: Data source table**

Data Source	Frequency	Latest data available	NAICS digits	Variables	Exclusions
Quarterly Census of Employment and Wages (QCEW)	Quarterly	2020	2-6	Employment, earnings, payroll per employee, total annual payroll	Public sector not covered by unemployment insurance program; self-employed
Non-Employer Statistics (NES)	Annual	2018	2-4	N of establishments, revenues	Firms with employees
Economic Census	5 years	2017	2-6	N of establishments, employees, revenues	Firms with no employees, RR, USPS
Bureau of Economic Analysis (BEA)	Annual	2019	2	GDP, real GDP, per capita real GDP	-
USA Trade	Annual	2019	3-4. However, data is downloaded by states, not by NAICS	Customs Value (Gen) (\$US), SWT (Gen) (kg); for all vessels, and for containerized vessels	Freight and import duties.

We calculate the following metrics:

### 1. Financial Performance Measures

- Revenues (data source: Economic Census and Economic Census of previous five years for updating to current year)

### 2. Workforce Statistics

- Number of employees (data source: QCEW, NES)
- Total Payroll (data source: QCEW-earnings)
- Payroll/employee (data source: QCEW)

### 3. Overall Economic Performance

- GDP (data source: BEA and Number of employees for expanding to 6-digit codes)

#### **Note: Accounting for the self-employed and GDP**

We use the NES to estimate self-employment. The data set provides two variables, revenues and number of establishments, where each establishment is one self-employed worker. However, NES is inconsistent with respect to NAICS codes available; it varies between 2 and 6 codes due to data

suppression to protect confidentiality. We used a similar approach to that of the Economic Census to expand NES to 6 digits; see equation 1 below. Note that revenues in NES is equivalent to revenues reported by firms with employees.

$$N \text{ Estab}_6 = N \text{ Estab}_3 * (\text{QCEW Emp}_6 / \text{QCEW Emp}_3),$$

where the subscripts represent the number of NAICS code digits. If we replace the NES with GDP, we can apply this same method to estimate GDP for all six-digit NAICS code. We include this calculation in the MySQL procedures for estimating the number of self-employments.

## 4. Instructions to update yearly metrics in Excel and MySQL

We download data from official websites first. Then, we do a simple data cleaning in Excel and store it in Excel as raw data. We convert the tables to csv format, and we transfer raw data into MySQL: for the tables in the year\_data schema, import all NAICS, industries and other strings as “text”, import all values used to calculate the metrics as “double” and ids as “int”. Lastly, we use the procedures in MySQL to produce deep data cleaning and have QCEW, NES, BEA, and EC ready to be used to calculate metrics. When using the MySQL procedures, we need to follow the order as described below. We illustrate the steps below. Note that in some tables and procedures “rawnaics\_code” is listed as “rawnaicscode”: this was done because of technical issues, but it does not change the results, just be careful to check for consistency.

### 4.1 Updating QCEW data

1. Follow these steps to update QCEW data for California:
  - a. QCEW data for California can be downloaded from: <https://www.labormarketinfo.edd.ca.gov/qcew/qcew-select.asp>. Then, on this page make the following selections:
    - i. Geography: choose California – Statewide
    - ii. Period: select the year n while making sure you choose the annual data.
    - iii. Output Format: Create a file to download.
  - b. That will open up the data. Now you can copy the data by selecting all (control+A or Command-A for Mac) then copying the data and pasting them in an empty Excel sheet (or open the CSV file with Excel directly). The data has four different categories: Private, Local Government, State Government and Federal Government (All labeled under the ownership tab). Filter and rename the columns as showed in Table 3.
  - c. We need to convert the data type to numbers with 0 decimal places in excel before transforming data into MySQL. No indentions for NAICS codes. *It is really crucial to follow the same column names and format as the previous years' data.*
  - d. Use the “Table Data Import Wizard” in MySQL to import the raw excel data into the database in MySQL and name it as “state\_qcew\_rawyear”.

**Table 3: Selecting and renaming columns for QCEW**

Column to retain	Rename to
own_title / Ownership	rawownership
industry_code / NAICS	rawnaics_code
annual_avg_estabs_count / Establishments	rawestabs
annual_avg_emplvl / Employments	rawemployments
total_annual_wages / Total_Payroll	rawpayroll_\$\$
annual_avg_wkly_wage / Average_Weekly	rawannual_avg_wkly_wage_\$\$
Industry_Title / industry_title	rawindus_title
Suppression (only for cal)	rawsuppression

2. Follow these steps to update QCEW data for US and the rest of the comparison states:
  - a. QCEW data for US can be downloaded from <https://www.bls.gov/cew/downloadable-data-files.htm>. Scroll down to QCEW NAICS-Based Data Files (1975 - most recent). Choose: CSVs, By Area, Annual Averages. Then, choose year n.
  - b. There are a lot of tables in the folder, we need the one called "20XX.annual US000 U.S. TOTAL", where 20XX is the year of interest. We also need the csv table for each comparison state; those tables are saved as "year.annual # state -- Statewide.csv", where "year" is the year in consideration, ".annual" and "-- Statewide.csv" are constant keywords, "#" is a unique identification number and "state" is the state needed.
  - c. Download the table and revise by retaining only the columns listed in Table 3 and renaming the columns as indicated in the table.
  - d. Name the table "state\_qcew\_rawyear" and use the "Table Data Import Wizard" in MySQL to import the raw excel data into the database in MySQL and name it as "state\_qcew\_rawyear".

## 4.2 Updating NES data

Follow these steps to update the NES data:

1. To download the data, go to: <https://data.census.gov/cedsci/>.
2. Click the load search and write the file named\_NS1700NONEMP as input for the search. The 17 after NS should be changed yearly with the last 2 digits of the year for which we are collecting

the data (Ex.: NS1800NONEMP for year 2018). Then a few results appear: “Tables”, “Maps” and “Pages” – choose “VIEW ALL TABLES” under “Tables”.

3. Choose “CUSTOMIZE TABLE” on the top right of the page. First click “Geos” in the toolbar at the top: here click on “nation” and select “United States”, also click on “State” and select all the relevant states. Then click “Codes” in the toolbar: click on “Industry Codes (NAICS)” and select “All available NAICS”.
4. In the toolbar, click on “hide”, then select only: “geographic area name”, “2017 NAICS code”, “meaning of 2017 NAICS”, “Year”, “Number of nonemployer establishment” and “Receipts (\$1000)”
5. Filter the table of “meaning of sales, value of shipments, or revenue size of establishment code” to “all establishments” and “meaning of legal form of organization code” to “all establishments”. Then download these data as Excel tables.
6. Revise the table by renaming the columns as in Table 4.

**Table 4: Selecting and renaming columns for NES**

Column to retain	Rename to
[Create manually in MySQL]	rawnes_id
geographic area name	rawgeo_name
2017 NAICS code	rawnaics_code
meaning of 2017 NAICS	rawindus_title
Year	rawyear
Number of nonemployer establishment	raw_nes
Nonemployer sales, value of shipments, or revenue (\$1000)	Rawreceipts_-\$1000

7. Convert the data type to numbers in excel. No indentions for NAICS codes. *It is really crucial to follow the same column names and format as the previous year’s data.*
8. Use the “Table Data Import Wizard” in MySQL to import the excel data into the database in MySQL and name the file “state\_nes\_rawyear”.

### 4.3 Updating BEA data

Follow these steps to update the BEA data:

1. To download the data, go to <https://apps.bea.gov/itable/iTable.cfm?ReqID=70&step=1>.
2. Click Annual GDP by state.
3. Click GDP in current dollars.

4. In the next window, choose NAICS.
5. Choose United states and all other states. Choose also “All statistics in table” for “Statistic” and “Levels” for “Unit of Measure”. Then, click next step.
6. Choose year n and click next step.
7. Download data as Excel tables. Put each state/country table in a different sheet of the same Excel file and call the sheets AZ, CAL, NV, UT, USA respectively. Name the Excel file “all\_bea\_rawyear” where year is the relevant year downloaded.
8. Revise the tables by retaining only the following column and renaming them as in Table 5 below.

**Table 5: Selecting and renaming columns for BEA data**

Column to retain	Rename to
GeoName	rawgeoname
LineCode	rawbea_id
Description	rawindus
year (Ex.: 2018)	rawgdp_\$(

9. Convert the data type to numbers in excel, with 1 decimal place. Remove the addenda. Trim the “rawindus” by replacing 2 spaces with no space. Make sure the column names are aligned to the left. Make sure that the “rawbea\_id” for USA is numerically consistent. If the “year” column is expressed in millions of current dollars, multiply the values by 1000000 to obtain “rawgdp\_\$(”; alternatively, change the relative column names, and the subsequent SQL procedures for processing the data, to reflect the magnitude chosen for the dollar values - take as example 2019, which is the year during which BEA raw data changed format - making sure that the final metrics all get expressed in \$million for consistency with previous year’s data.
10. Use the “Table Data Import Wizard” in MySQL to import the excel data into the database in MySQL and name the file “state\_bea\_rawyear”.

#### 4.4 Updating Economic Census data

The EC data is issued every 5 years. The most recent is 2017. For all metrics generated for 2015 through 2017, the 2012 EC data was used. The EC data needs to be updated every 5 years using Excel.

1. To download the data, go to: <https://data.census.gov/cedsci/>.
2. Search for the file called: EC1700BASIC; again, change the 17 with xx according to the 20xx year one is looking for. Choose “VIEW ALL TABLES”, then “CUSTOMIZE TABLE”. First click “Geos” in the toolbar at the top: here click on “nation” and select “United States”, also click on “State” and select all the relevant states. Then click “Codes” in the toolbar: click on “Industry Codes (NAICS)” and select “All available NAICS”. Do not forget to filter “meaning of type of operation code” and “meaning of tax status code” to “all establishments”.

3. Hide columns that one does not want before downloading in excel, by clicking “hide” in the toolbar and keeping only the columns showed in Table 6.
4. Now download data as Excel tables, one for file, and name each file “state\_ec\_rawyear”, where the state can be az, cal, nv, ut or usa and the year is the relevant year downloaded. We rename the columns as follows:

**Table 6: Selecting and renaming columns for EC data**

Columns needed	Rename to
[create manually in MySQL]	ecraw_id
2017 NAICS code	rawnaics
Meaning of NAICS code	rawindus
Year	rawyear
Number of establishments	rawestab
Sales, value of shipments, or revenue (\$1000)	rawrevenues_-\$1000
Annual payroll (\$1000)	rawannualpay_-\$1000
First-quarter payroll (\$1000)	raw1quarterpay_-\$1000
Number of employees	rawemployments

5. Convert the data type to numbers in excel before transforming data into MySQL. No indentions for NAICS codes. *It is really crucial to follow the same column names and format as the previous year’s data.*
6. Then, use the “Table Data Import Wizard” in MySQL to import the raw excel data into the database in MySQL and name the file “state\_ecyear”.

## 4.5 Updating Ports data

1. Download data from <https://usatrade.census.gov/data/Perspective60/View/dispview.aspx?ReportId=139520>.
  - a. (You need to register and set up an account on this website first).
2. On the website, click “Data Source Selection”.
3. Click “State Import Data” by “NAICS” Commodities and “State Export Data” by “NAICS” Commodities, respectively, which are state-level imports and exports reports that have already been pre-formed. Choose the specific year by clicking “Time” in the Report Contents column on the left-hand side of the data page. Also, under “Measures,” we download data for all measures (essential ones mentioned below), but we do not need “Air Value (\$US)” or “Air SWT (kg)” for either imports or exports. We use the containerized values when comparing them to non-containerized values, which we calculate by subtracting containerized values from the respective totals. See Table 7 below for data definitions.

**Table 7: Port data definitions**

<b>SWT (kg)</b>	<b>Shipping weight of trade, in kilograms</b>
<b>Vessel Customs Value (Gen) (\$US)</b>	The customs value of goods that enter or leave the country by seafaring vessel as appraised by the U.S. Customs and Border Protection. Excludes freight and duties. (General Imports)
<b>Customs Containerized Vessel Value (Gen) (\$US)</b>	The customs value goods transported in any van-type container as appraised by the U.S. Customs and Border Protection. Excludes U.S. import duties, freight, insurance, and other charges incurred in bringing the merchandise to the U.S. (General Imports). (Note that containerized vessel trade is already included in vessel trade above.)
<b>Vessel SWT (Gen) (kg)</b>	The gross weight in kilograms of shipments made by seafaring vessel at customs.
<b>Containerized Vessel SWT (Gen)(kg)</b>	The weight of goods, in kilograms, transported in a seafaring vessel.
<b>Vessel Total Exports Value (\$US)</b>	The value of trade through vessel ports (seaborne trade).
<b>Containerized Vessel Total Exports Value (\$US)</b>	The value of export shipments transported in any van-type container. (Note that containerized vessel trade is already included in vessel trade above.)
<b>Vessel Total Exports SWT (kg)</b>	The shipping weight of trade going through vessel port (seaborne trade) expressed in kilograms.
<b>Containerized Vessel Total Exports SWT (Kg)</b>	The shipping weight of export trade transported in any van-type container expressed in kilograms.

4. Select the relevant states (CA, GA, VA, WA and NY+NJ) under “State” in the Report Contents bar. There is the option of selecting the green button for “All Commodities” under “Commodity” to download all NAICS by sector, in case one wants to analyze data in detail; however, we will use only the aggregated values for our calculations and thus no selection has to be made under this tab because the default is already set as all commodities aggregated. Click “Report” in the blue area at the very top on the page. Download format as “Comma-delimited ASCII format (\*.csv)” and data format as “sparse list format”. Then export it to excel. Finally, Combine the imports and exports data into one excel table.
5. In the excel table, convert data type to numbers and calculate the growth rate and shares of each state in the whole U.S. Since we only conduct simple calculations here, it is easier to use Excel to finish those calculations. We update data in the same table every year instead of creating new tables.
6. We need to change the table structure downloaded from the website to a new type that could be easily read after transforming to the MySQL database as below.
7. Input imports, exports, and combined excel tables to MySQL.

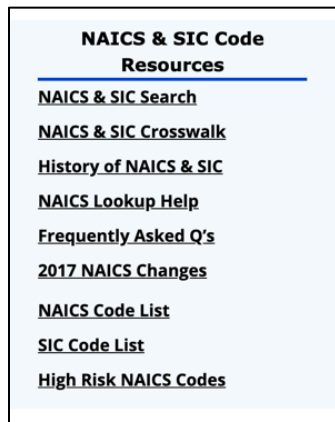
**Table 8: Example of MySQL database**

State	All States_2015	All States_2016	All States_2017	All States_2018	All States_2019	California_2015	California_2016	California_2017	California_2018	California_2019	Georgia_2015
Vessel Custo	1052477121977	1000535418537	1075567451635	1174659273597	1117827191653	219719336551	222705112162	237891301257	249429937434	228265418387	65171349089
Customs Con	734904620654	717076653945	752950235418	818089253799	798863278564	154321244112	160343064036	169754211602	183350696648	173499549783	44910491517
Vessel SWT	670983073260	672947553498	682317359223	663563247867	609695375194	95023945561	99904685988	107836580107	108201796828	104885025965	15223929284
Containerize	163568432436	162794804446	170325341249	178426871940	175900521287	32450007932	34262519112	35948774478	37552071032	36261159643	9057520621

## 4.6 Updating NAICS code

The NAICS code table is updated only in years when the US Dept of Commerce issues an update. We create a new database in MySQL to store new NAICS code. For example, we create a new database called “2017\_2021\_naics”, and we copy all the tables from 2012\_2016\_naics to 2017\_2021\_naics.

1. Go to: <https://www.naics.com/search/>.
2. On the right, there is a year change option. Here is the 2017 NAICS change, and next update is 2022 NAICS change.



**Figure 1: Choose the 2017 NAICS Changes**

3. Conduct a comparison of old and new NAICS codes. If there is a change related to our industry sectors, update the new information in the respective table of 2017\_2021\_naics.
4. After importing NAICS to MySQL, make sure to trim the “indus” column, so that there is no indentation.

## 4.7 Implementing MySQL procedures

After creating all the required raw data tables in MySQL, we produce tables to be used in calculating metrics. The following procedures are conducted in the order below.

1. Generate cleaned NES data table: click “state\_get\_nes\_from\_nes\_raw\_year” procedure to yield a table called “state\_nesyear”.



2. Generate cleaned QCEW data table: click “state\_get\_qcew\_from\_qcew\_raw\_year” procedure to yield a table called “state\_qcewyear”.
3. Generate cleaned BEA data table: click “state\_get\_bea\_from\_bea\_raw\_year” procedure to yield a table called “state\_beayear”. (For this procedure, make sure distinct NAICS only are selected, and that all nes\_bea\_naics.indus values are already trimmed to begin with.
4. Estimate NES numbers for each 6-digit industry sector: click “state\_get\_nes\_calculate\_year” procedure. It uses the table nes\_calculate to yield a table called “state\_nes\_calculateyear”.
5. Estimate current year revenues by 3-digit industry sector: click “state\_get\_ec\_calculate\_year” procedure. It uses the table ec\_calculate to yield a table called “state\_ec\_calculateyear”.
6. Estimate current year revenues by 6-digit sector: click “state\_get\_ec\_from\_ec\_calculate\_year” procedure to yield a table called “state\_ec\_year”.
7. Estimate current year GDP by 6-digit sector: click “state\_get\_bea\_calculate\_year” procedure. It uses the table bea\_calculate to yield a table called “state\_bea\_calculateyear”. For this procedure, as well as for the oep procedure, make sure that the naics table used is naics\_total and not trucking\_naics

NOTE: We must read notes in every SQL procedure and always change years to appropriate years. For example, as in the note shown below, to get fpm (financial performance measures) and tfpm (total financial performance measures), we copy and paste the procedure from the previous year. The only two things that need to be changed is the year and the NAICS code database. The notes list the lines that need to be changed to the target year. The notes also remind the user to update the NAICS database in the appropriate year. For example, we need to use 2017\_2021\_naics.trucking\_naics for year between 2017 and 2021. Moreover, the notes remind the user that rail roads and marine cargo handling are excluded due to data problems. In the procedure state\_get\_fpm\_tfpm\_year, make sure, when creating the m\_state\_fpmyear table, to specify in the select statement that tn\_id refers to trucking\_naics, if it is not already, so that no error will be raised. Moreover, for CA, perform the procedure to get the trucking metrics as last.

Finally, sometime the columns cited in the procedures raise an error as “ambiguous”: in that case just specify in the SQL statement which table those columns relate to, with a dot in between table and column.

```

CREATE DEFINER=`root`@`localhost` PROCEDURE `az_get_fpm_tfpm_2015`()
BEGIN
-- note: the year here is 2015. Pay attention to change to appropriate years.
-- Line:1,3,11,12,13,43,64
-- note: be careful to update the 2012_2016_naics.trucking_naics
-- note: We did not include railroads of 482112 and 482111, and 488320-marine cargo handling.

```

Figure 2: Notes' example from az\_get\_fpm\_tfpm\_2015 (the procedure to get 2015 Arizona fpm and tfpm)

## 5. Description of all databases and tables

This section provides descriptions of necessary data and instructions for updating yearly data in the established databases that construct and calculate metrics tracking the economic competitiveness of the freight transport sector. The databases and tables are organized in a nested or hierarchical structure within MySQL. The first level of the structure presented in Figure 3. It shows that there is a “year\_data” and “year\_metrics” set of tables for each year. These tables store the annual data and metrics respectively. Currently data are complete for 2015 through 2018. The NAICS code tables are produced only when the classifications are adjusted. Thus, there are two NAICS databases, one for the 2012-2016 codes and one for the 2017-2021 codes. As noted above, when a new version of NAICS is released, we compare all the 6-digit codes in our sectors and make any necessary conversions. There were no changes from 2012-2016 to 2017-2021.

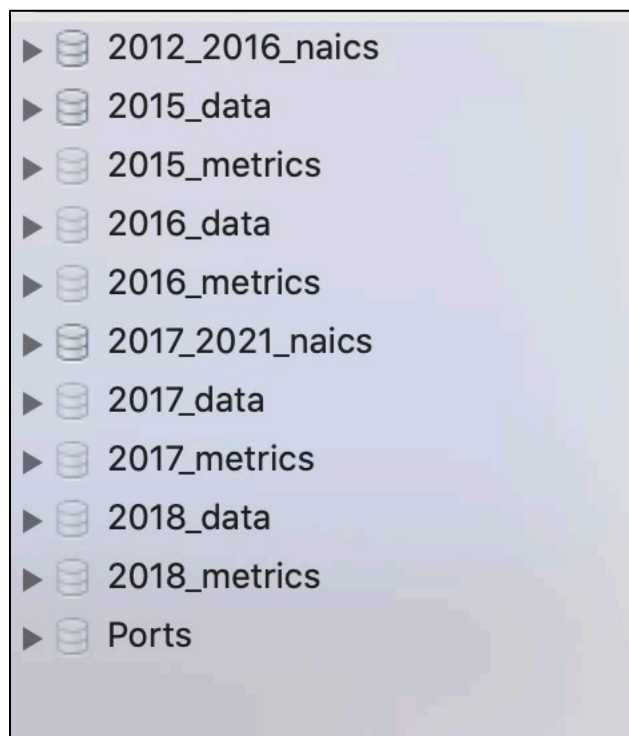
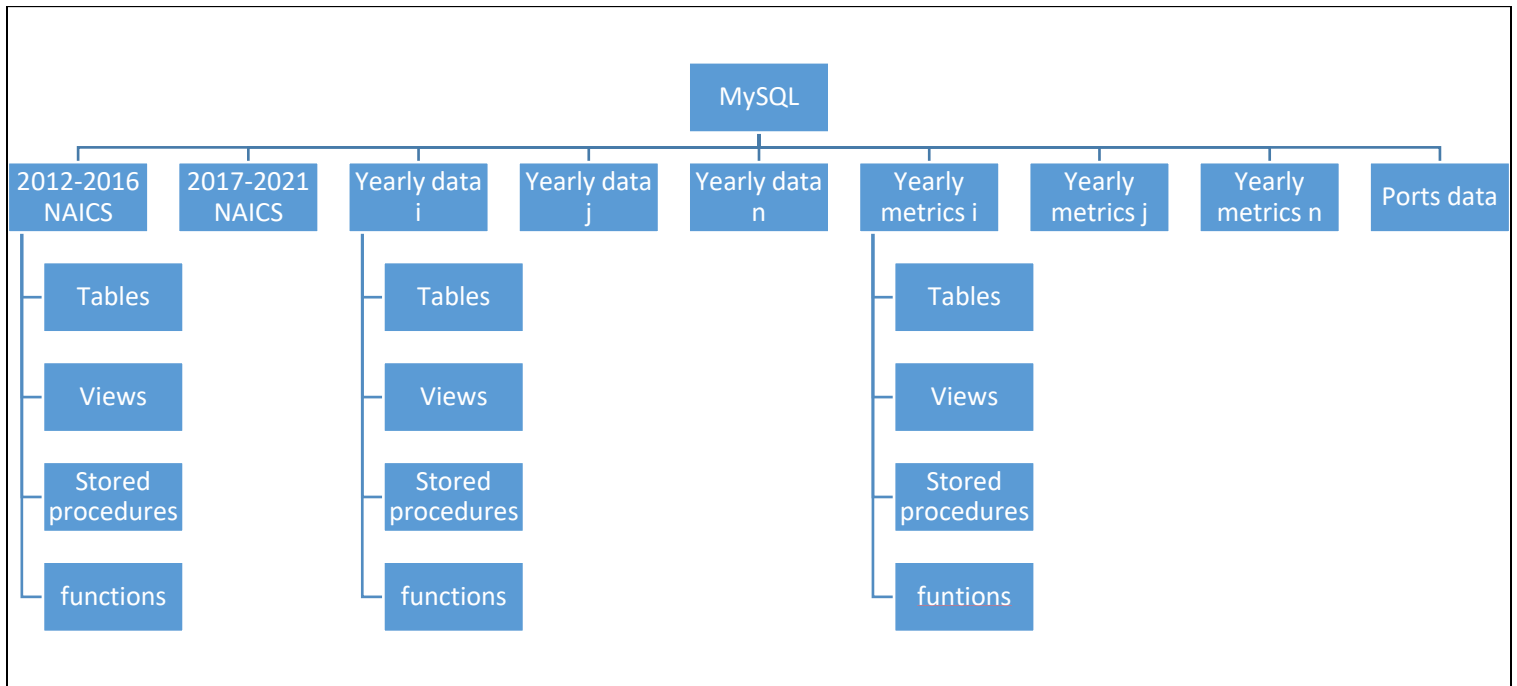


Figure 3: Summary of databases in MySQL

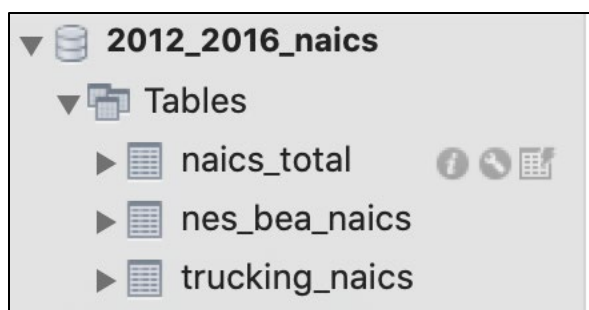
The general structure of the MySQL database is illustrated in Figure 4. The first level contains the 11 files listed in Figure 3 (not all are shown in the figure). Each of these files has a set of files within. The file types are Tables, Views, Stored Procedures, and Functions. At each level, the file types may or may not be populated, but at least one file type will be populated. For example, in the 2012-2016 NAICS, only the tables section is populated, and it has three tables. These will be described next. The structure of yearly data and yearly metrics files follows.



**Figure 4: Structure of MySQL database - all schemas, including NAICS and Ports, contain all subgroups (“Tables”, “Views”, “Stored procedures” and “Functions”), despite the fact that some are empty**

### 5.1 Database 1: NAICS

In the 2012\_2016\_naics database, we have three tables (see Figure 5). The naics\_total stores all the NAICS 6-digit codes and definitions. The nes\_bea\_naics is a sub-table of naics\_total, and we use this table to estimate six-digit NAICS in NES and BEA. The trucking\_naics contains all the trucking sectors by NAICS code we use in the inter-state comparisons.



**Figure 5: 2012\_2016\_naics**

### 5.1.1 naics\_total

Figure 6 gives an example of `naics_total`. It contains 45 rows, and each row is one of the freight sectors (see Table 1). The column “`naics`” gives the (typically 6-digit) NAICS code. The column “`indus`” gives the code name. The column “`nes_related_naics`” gives the NAICS code used to estimate the number of self-employed for the industry. As noted above, the NES data has a lot of code suppression. The `nes_related_naics` is the most disaggregated code available and is used to estimate the share of the 6-digit code of interest based on sector ratios in QCEW.

nt_id	naics	indus	nes_related_naics	gdp_related_naics	category
1	483111	Ocean Carriers-Deep sea freight Transportation	483	48-49	ac
2	483113	Coastal and great lakes freight transportation	483	48-49	ac
3	483211	Inland water carriers	483	48-49	ac
4	482112	Railroads-Shortlines	0	0	ac
5	482111	Classes-line haul-571 Carriers-including passen...	0	0	ac
6	484110	Trucking-General Frieght trucking, Local	48411	48-49	ac
7	484121	General Frieght trucking, Long distance, truckload	48412	48-49	ac
8	484122	General Frieght trucking, Long distance, less th...	48412	48-49	ac
9	491110	Courriers/Last mile	491	48-49	ac
10	492110	Courriers and express delivery	492	48-49	ac
11	492210	Local messengers and local delivery	492	48-49	ac
12	481112	Air Transport	481	48-49	ac
13	481212	Non scheduled chartered air transportation	481	48-49	ac
14	486110	Pipeline-Oil	486	48-49	ac
15	486210	Gas	486	48-49	ac
16	486910	Refined Petroleum Product	486	48-49	ac
17	486990	All other	486	48-49	ac
18	562	Waste Management	562	562	r
19	488510	Freight Transportation Arrangement	488	48-49	s

Figure 6: Example `naics_total` table

The column called “`gdp_related_naics`” is used to estimate GDP for the industry. Recall that the BEA data is limited to 2-digit sectors. We use the same process of expanding to 6-digit sector based on ratios of employment in the QCEW data.

The last column “`category`” identifies the category to which the given sector belongs. As shown in Table 1, we clustered the sectors into five categories. The category names are as follows:

ac = all carrier

r = reverse logistics

s = service providers

t = transportation dependent activity

co = cargo owners

### 5.1.2 nes\_bea\_naics

The `nes_bea_naics` table contains the 28 sectors that are used to estimate NES and GDP of all industries in `naics_total`. For the `naics_total` and `nes_bea_naics`, the sequential order of NAICS codes must be retained. The first column, `nb_id` is the sequential order id. The remaining columns are the NAICS codes and definitions. See Figure 7.

nb_id	naics	indus
1	22	Utilities
2	221	Utilities
3	31-33	Manufacturing
4	42	Wholesale trade
5	44-45	Retail trade
6	48-49	Transportation and warehousing
7	481	Air transportation
8	483	Water transportation
9	48411	General freight trucking, local
10	48412	General freight trucking, long-distance
11	4842	Specialized freight trucking
12	486	Pipeline transportation
13	488	Support activities for transportation
14	491	postal service
15	492	Couriers and messengers
16	4931	Warehousing and storage
17	53	Real estate and rental and leasing
18	532	rentals
19	56	Administrative and Waste Services
20	562	Waste management and remediation...
21	81	Other services (except government...
22	81121	Electronic and precision equipment r...
23	81131	Commercial and industrial machiner...
24	81141	Home and garden equipment and ap...
25	81142	Reupholstery and furniture repair
26	81221	Funeral homes and funeral services
27	81291	Pet care (except veterinary) services
28	813	Religious, grantmaking, civic, profes...

Figure 7: All items in nes\_bea\_naics

### 5.1.3 Trucking\_naics

The trucking\_naics table records all industries in the trucking sector. The column nes\_related\_naics, gives the sector used to estimate NES, and the column gdp\_related\_naics gives the sector used to estimate GDP. The category column is as defined previously. See Figure 8.

tn_id	naics	indus	nes_related_naics	gdp_related_naics	category
1	484110	Trucking-General Frieght trucking, Local	48411	48-49	ac
2	484121	General Frieght trucking, Long distance, truckload	48412	48-49	ac
3	484122	General Frieght trucking, Long distance, less than truc...	48412	48-49	ac
4	491110	Courriers/Last mile	491	48-49	ac
5	492110	Courriers and express delivery	492	48-49	ac
6	811213	Communication Equipment Repair and Maintenance	81121	81	t
7	811219	Other Electronic and Precision Equipment Repair and...	81121	81	t
8	811310	Commercial and Industrial Machinery and Equipment (...)	81131	81	t
9	811411	Home and Garden Equipment Repair and Maintenance	81141	81	t
10	811412	Appliance Repair and Maintenance	81141	81	t
11	811420	Reupholstery and Furniture Repair	81142	81	t
12	812210	Funeral Homes and Funeral Services	81221	81	t
13	812910	Pet Care (except Veterinary) Services	81291	81	t

Figure 8: All industries in trucking\_naics

The tables in the NAICS database are used in different applications. The `naics_total` is used when calculating:

1. `qcew`
2. `gdp_calculate`
3. `nes_calculate`
4. `ec_calculate`
5. `ec`
6. `fpm`
7. `oep`

The `nes_bea_naics` is used when calculating:

1. `qcew`
2. `bea`
3. `nes`

When NAICS is updated every five years, we create new `naics_total`, `nes_bea_naics` and `trucking_naics` following the instructions in the section 4 above.

## 5.2 Database 2: data

### 5.2.1 2015\_data

We use the 2015 tables to describe the annual `*_data` and `*_metrics` tables. Figure 9 shows the structure of the “2015\_data” database. The 2015\_database has four possible types of information: tables, views, stored procedures, and functions. In our case, only tables and stored procedures are used. The Tables’ files include data tables for each state and the US as a whole. For each state, there are 12 tables in 2012 and every other five years, and there are 10 tables (no “`state_ecyear`” and “`state_qcewyear`”) in the middle years. Figure 10 gives an example of the tables for Arizona. First, there are the tables generated from downloading and processing the various data sources as described in Section 4, raw and cleaned data files for QCEW, NES, BEA, and EC. Second, there are the “calculate” files used to estimate NES 6-digit employment, and 6-digit revenues and GDP (see Section IV.G). Finally, there are the base year tables for EC, NES and QCEW that were used to estimate from the 2012 EC data.

The “Stored Procedures” file has all the MySQL procedures to manage the tables. Thus, to obtain a manipulated table, we need to click the respective procedure. For example, in order to create `az_bea_calculate2015`, we call up the `state_get_bea_calculate_year` procedure.

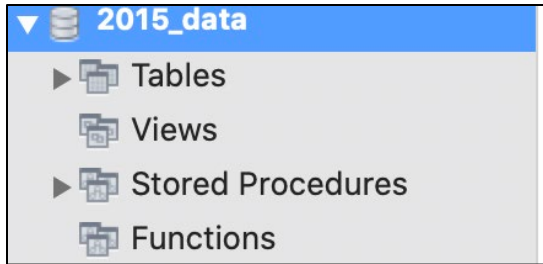


Figure 9: The 2015\_data database

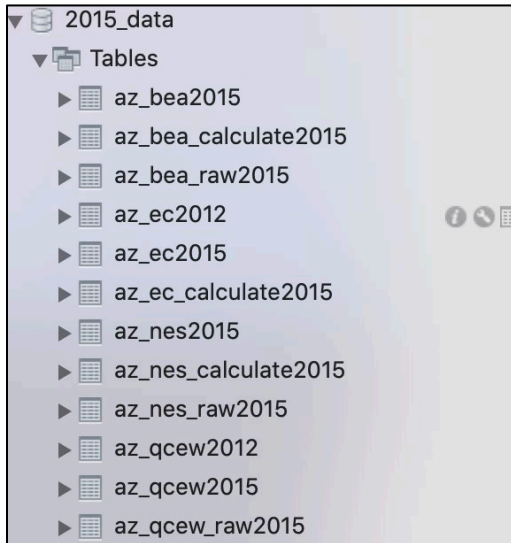


Figure 10: The 2015\_data of Arizona

## 5.3 Database 3: metrics

### 5.3.1 2015\_metrics

The annual metrics database calculates and stores all the metrics for all states and the United States. All the procedures for calculating the metrics are in the stored procedures folder. To generate metrics tables, we call up the relevant procedures. See Figure 11.

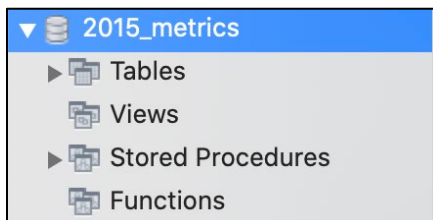


Figure 11: The 2015\_metrics database



Within the Tables folder, there are 36 tables. Three sets of metrics are calculated: financial performance measures, workforce statistics, and overall economic performance. The tables are named to describe what they contain. The form is:

x\_yy\_zzyear,

where:

x = m or mt; m = 6-digit industry level metric, and mt = category level metric

yy = state, and for trucking metrics becomes yytruck

zzyear = type of performance metric and year; fpm = financial performance, ws = workforce statistics, and oep = overall economic performance

Figure 12 shows part of the contents of the Tables folder. Figure 13 shows the screenshot table m\_az\_fpm2015, the 6-digit level financial performance metrics for Arizona. Note that the table contains two fpm metrics: total revenues (without self-employed) and total revenues with self-employed. This table is calculated by calling up the 16 procedures from the Stored Procedures files. Figure 14 shows the summary table for the same metrics. We calculate all the metrics with and without cargo owners, because cargo owners constitute a much larger share of the economy. In the category column of Figure 14, total\_total = all freight sectors + cargo owners, and total\_nocargo = all freight sectors only. The other codes are the category codes.

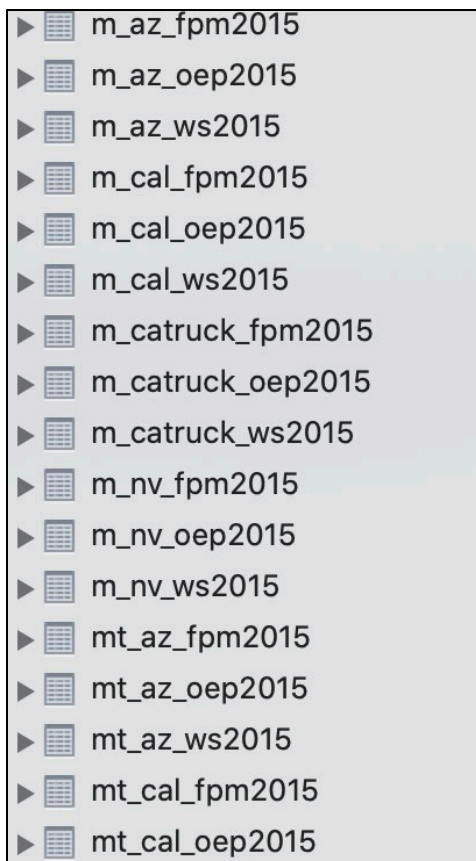


Figure 12: Partial tables of 2015\_metrics database



tn_id	naics	indus	category	revenues\$	revenues\$_nes	emp	emp_nes
1	484110	Trucking-General Frieght trucking, Local	ac	207845534.0309	362353534.03088	3276	5163
2	484121	General Frieght trucking, Long distance, truckload	ac	1467284755.2314	1879307288.4097319	8078	11699
3	484122	General Frieght trucking, Long distance, less th...	ac	586638808.7557	766739274.9851791	3531	5114
4	491110	Courriers/Last mile	ac	0.0000	0	9399	9399
5	492110	Courriers and express delivery	ac	1231375020.8476	1309948967.039664	9369	12661
6	811213	Communication Equipment Repair and Mainten...	t	14588977.7948	17811158.033764	137	216
7	811219	Other Electronic and Precision Equipment Repa...	t	166436792.4475	181724508.932097	650	1024
8	811310	Commercial and Industrial Machinery and Equip...	t	521995537.4019	569262537.4019151	3274	4124
9	811411	Home and Garden Equipment Repair and Maint...	t	6200180.0000	12939133.475900002	67	253
10	811412	Appliance Repair and Maintenance	t	35863875.0070	81024921.479229	449	1697
11	811420	Reupholstery and Furniture Repair	t	14165537.9361	26540537.936130002	278	683
12	812210	Funeral Homes and Funeral Services	t	142969420.7316	146438420.731616	1275	1359
13	812910	Pet Care (except Veterinary) Services	t	81760136.7677	124395136.767736	1810	3582

Figure 13: m\_az\_fpm2015 (2015 financial performance measures of Arizona), metrics by category

category	revenues\$	revenues\$_nes	emp	emp_nes
total_total	4477124576.9522	5478485419.223842	41593	56974
ac	3493144118.8656	4318349064.465455	33653	44036
t	983980458.0866	1160136354.758387	7940	12938
total_nocargo	4477124576.9522	5478485419.223843	41593	56974

Figure 14: mt\_az\_fpm2015 (2015 financial performance measures of Arizona summarized by categories) (Since the industries does not include cargo owners, the total\_total and the total\_nocargo have the same data).

In some cases, our metrics are compared relative to other groups. For example, we may want to compare various states, considering each state’s share of the total US economy. We constructed tables in “Views” to store data for this purpose. Thus, when we need the share weights, we can simply click the “Views” and get tables from there. The tables with names starting with “new” are just intermediate tables to calculate the final ratio tables. The final tables have the name such as “aztousa\_2015”, which means the weight of Arizona in the U.S. in 2015, as shown below. Here, we first put all metrics for a state together to create a table called “newm\_state\_year”, and the “newm\_all\_2015” (optional) contains all metrics of all states. Then, we use the “newm\_state\_year” tables to divide by the “newm\_usa\_year” table to have the “statetousa\_year” tables. Since this is a one-line code, there is no established procedures for this; however, there are SQL templates that can be copied and pasted in the query box, as long as the relevant years are changed.

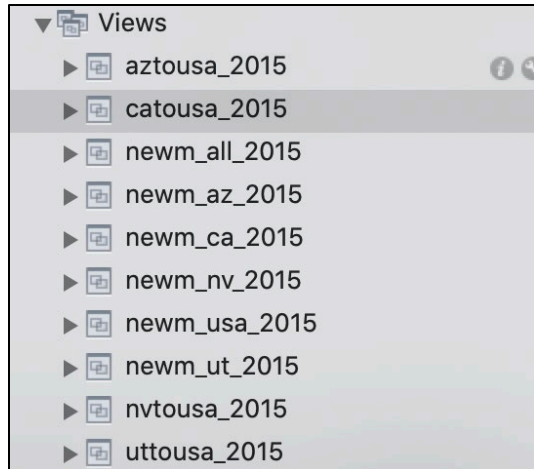


Figure 15: Views

## 5.4 Database 4: Ports

Lastly, we have a special database for ports. In this case we simply add each year's data to the existing table as it becomes available. Also, the tables are manipulated via Excel first, and then they are uploaded to MySQL. There are 12 tables in the Ports database; see Figure 16. The tables "imports\_aggregated", "exports\_aggregated" are the files with aggregated data downloaded from the [usa.trade/census.gov](http://usa.trade/census.gov) website. The tables "combined\_aggregated", "\*\_growth rate", tables "\*\_growth indexed", and "\*\_market share" are generated in excel; see Figure 16.

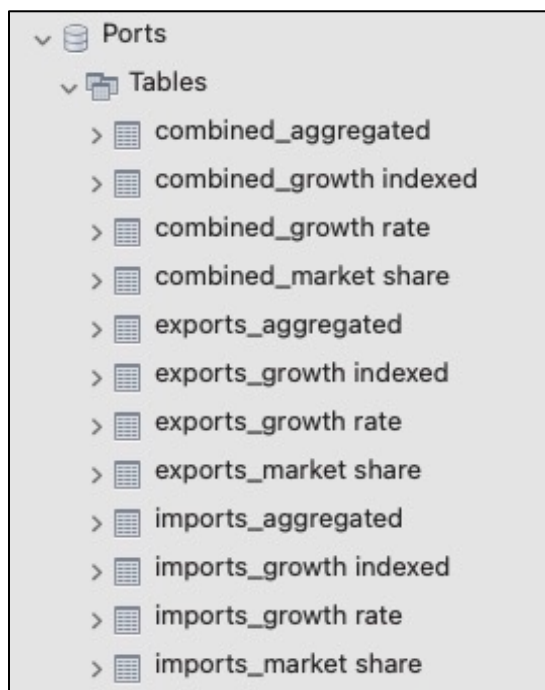


Figure 16: All tables in the Ports database

## 6. Data changes and adjustments

There are many challenges in generating comparable data across both time and industry sectors at the 6-digit level. This section summarizes changes and adjustments made as we worked with the data.

### Exclusions

Due to data suppressions and inconsistencies, we excluded the following sectors: 482112-Railroads-Shortlines, 482111-Classes-line haul railroads, and 488320-Marine Cargo Handling. It should be noted that the railroad sector is entirely missing from the metrics due to data limitations.

### Adjustments

We moved 491110-Couriers/Last mile and 492110-Couriers and Express Delivery to the “All Carriers” section and removed from the “All Transportation Service Providers” section in the trucking comparison states.

We removed 491110-Couriers/Last Mile and 492110-Couriers and Express delivery from All Transportation Service Providers to avoid double counting.

We added back the 532120-Equipment Leasing data in the calculations of All Transportation Service Providers.

We replaced establishments with employment in QCEW to estimate the number of self-employment.

We updated the employments of 2211- Energy Production to 18704 from 35548.

We replaced 48-49 with 53 as the parent code to estimate GDP of 532120- Equipment Leasing.

### Awaiting updates

The 2019 raw data of California, the United States, and the trucking comparison states have been released, and have been processed with SQL procedures, except for the self-employed, because the 2019 NES raw data has not been released yet.

## Appendix A Data File Structure

The data files are maintained on a secure server in the Sol Price School of Public Policy at USC. The METRANS Transportation Consortium has access to the server for all METRANS related research. The server has automatic daily backup to servers outside the region to protect against any data loss in the case of a major disaster. The file structure is given below:

**Note: the subfolders are listed in alphabetical order, with numbers having priority over letters. The words between “ ” are the names of the folders and the subfolders. Subfolders are indented below their containing folder, and numbers are put to further clarify folders’ nesting. The opening line is the path within the drive to the “Research” folder.**

X:/METRANS/RAs/econ competitiveness

“Research”:

Description = containing the information and data analysis needed to evaluate economic competitiveness of businesses in order to predict the impacts of the California Sustainable Freight Action Plan.

Nested folders = 3:

1. “Master Database”:

Description= 14.9 MB folder for data backup containing every year of research, starting from 2015, for a total of 534 files.

Nested folders = 7:

1.1 “2012\_2016naics(2017 no change)” :

Description= containing 11 files listing all the NAICS codes for the years 2012-2016.

Nested Folders= 0

1.2 “2017\_2021naics”:

Description= containing 11 files listing all the NAICS codes for the years 2017-2021, which are unchanged from the previous 5 years.

Nested Folders= 0

1.3 “Ports comparison”:

Description= containing an Excel file with Ports’ imports and exports, subdivided into 3 sheets: 1. Imports - import data of all states and their market shares in the whole U.S., 2. Exports - export data of all states and their market shares in the whole U.S., 3. Combined - import + export data.

Nested Folders= 0

1.4 “Research\_2015Database”:

Description= containing all raw data, SQL procedures and metrics for the

year 2015.

Nested Folders= 2:

1.4.1 “Data\_EXCEL”:

Description = contains all data including online raw data and cleaned & summarized data from MySQL.

Nested folders = 10:

1.4.1.1 “2015\_data\_az”:

Description = 7 files with raw 2015 data for Arizona state; sources: QCEW (Quarterly Census of Employment and Wages), NES (Non-Employer Statistics), Economic Census, BEA (Bureau of Economic Analysis).

Nested folders = 0

1.4.1.2 “2015\_data\_ca”:

Description = 13 files with raw 2015 data for California state; sources: QCEW (Quarterly Census of Employment and Wages), NES (Non-Employer Statistics), Economic Census, BEA (Bureau of Economic Analysis).

Nested folders = 0

1.4.1.3 “2015\_data\_nv”:

Description = 7 files with raw 2015 data for Nevada state; sources: QCEW (Quarterly Census of Employment and Wages), NES (Non-Employer Statistics), Economic Census, BEA (Bureau of Economic Analysis).

Nested folders = 0

1.4.1.4 “2015\_data\_usa”:

Description = 7 files with raw 2015 data for the whole USA; sources: QCEW (Quarterly Census of Employment and Wages), NES (Non-Employer Statistics), Economic Census, BEA (Bureau of Economic Analysis).

Nested folders = 0

1.4.1.5 “2015\_data\_ut”:

Description = 7 files with raw 2015 data for Arizona state; sources: QCEW (Quarterly Census of Employment and Wages), NES (Non-Employer Statistics), Economic Census, BEA (Bureau of Economic Analysis).

Nested folders = 0

1.4.1.6 “2015\_metrics\_az”:

Description = contains 6 csv files with processed 2015 data for Arizona state, yielding the following metrics: financial performance measures, workforce statistics and overall economic performance.

Nested folders = 0

1.4.1.7 “2015\_metrics\_ca”:

Description = contains 12 csv files with processed 2015 data for California state, yielding the following metrics: financial performance measures, workforce statistics and overall economic performance. The trucking industry is manipulated together with the other data and also singularly.

Nested folders = 0

1.4.1.8 “2015\_metrics\_nv”:

Description = contains 6 csv files with processed 2015 data for Nevada state, yielding the following metrics: financial performance measures, workforce statistics and overall economic performance.

Nested folders = 0

1.4.1.9 “2015\_metrics\_usa”:

Description = contains 6 csv files with processed 2015 data for the U.S.A, yielding the following metrics: financial performance measures, workforce statistics and overall economic performance.

Nested folders = 0

1.4.1.10 “2015\_metrics\_ut”:

Description = contains 6 csv files with processed 2015 data for Utah state, yielding the following metrics: financial performance measures, workforce statistics and overall economic performance.

Nested folders = 0

1.4.2 “Data\_MySQL”:

Description = contains the MySQL procedures needed to manipulate raw data tables and yield results for 2015.

Nested folders = 5:

1.4.2.1 “az\_procedures”:

Description = contains 10 SQL programs for Arizona state used to calculate metrics for the year 2015.

Nested folders = 0

1.4.2.2 “ca\_procedures”:

Description = contains 12 SQL programs for California state used to calculate metrics for the year 2015.

Nested folders = 0

1.4.2.3 “nv\_procedures”:

Description = contains 10 SQL programs for Nevada state used to calculate metrics for the year 2015.

Nested folders = 0

1.4.2.4 “usa\_procedures”:

Description = contains 10 SQL programs for the U.S.A. used to calculate metrics for the year 2015.

Nested folders = 0

1.4.2.5 “ut\_procedures”:

Description = contains 10 SQL programs for Utah state used to calculate metrics for the year 2015.

Nested folders = 0

1.5 “Research\_2016Database”:

Description= containing all raw data, SQL procedures and metrics for the year 2016.

Nested Folders= 2:

1.5.1 “Data\_EXCEL”:

Description = contains all data including online raw data and cleaned & summarized data from MySQL.

Nested folders = 10:

1.5.1.1 “2016\_data\_az”:

Description = 4 files with raw 2016 data for Arizona state; sources: QCEW (Quarterly Census of Employment and Wages), NES (Non-Employer Statistics) and BEA (Bureau of Economic Analysis).

Nested folders = 0

1.5.1.2 “2016\_data\_ca”:

Description = 13 files with raw 2016 data for California state; sources: QCEW (Quarterly Census of Employment and Wages), NES (Non-Employer Statistics) and Economic Census, BEA (Bureau of Economic Analysis).

Nested folders = 0

1.5.1.3 "2016\_data\_nv":

Description = 3 files with raw 2016 data for Nevada state; sources: QCEW (Quarterly Census of Employment and Wages), NES (Non-Employer Statistics) and BEA (Bureau of Economic Analysis).

Nested folders = 0

1.5.1.4 "2016\_data\_usa":

Description = 3 files with raw 2016 data for the whole USA; sources: QCEW (Quarterly Census of Employment and Wages), NES (Non-Employer Statistics) and BEA (Bureau of Economic Analysis).

Nested folders = 0

1.5.1.5 "2016\_data\_ut":

Description = 3 files with raw 2016 data for Arizona state; sources: QCEW (Quarterly Census of Employment and Wages), NES (Non-Employer Statistics) and BEA (Bureau of Economic Analysis).

Nested folders = 0

1.5.1.6 "2016\_metrics\_az":

Description = contains 6 csv files with processed 2016 data for Arizona state, yielding the following metrics: financial performance measures, workforce statistics and overall economic performance.

Nested folders = 0

1.5.1.7 "2016\_metrics\_ca":

Description = contains 12 csv files with processed 2016 data for California state, yielding the following metrics: financial performance measures, workforce statistics and overall economic performance. The trucking industry is manipulated together with the other data and also singularly.

Nested folders = 0

1.5.1.8 "2016\_metrics\_nv":

Description = contains 6 csv files with processed 2016 data for Nevada state, yielding the following metrics: financial performance measures, workforce statistics and overall economic performance.



Nested folders = 0

1.5.1.9 “2016\_metrics\_usa”:

Description = contains 6 csv files with processed 2016 data for the U.S.A, yielding the following metrics: financial performance measures, workforce statistics and overall economic performance.

Nested folders = 0

1.5.1.10 “2016\_metrics\_ut”:

Description = contains 6 csv files with processed 2015 data for Utah state, yielding the following metrics: financial performance measures, workforce statistics and overall economic performance.

Nested folders = 0

1.5.2 “Data\_MySQL”:

Description = contains the MySQL procedures needed to manipulate raw data tables and yield results for 2016.

Nested folders = 5:

1.5.2.1 “az\_procedures”:

Description = contains 10 SQL programs for Arizona state used to calculate metrics for the year 2016.

Nested folders = 0

1.5.2.2 “ca\_procedures”:

Description = contains 11 SQL programs for California state used to calculate metrics for the year 2016.

Nested folders = 0

1.5.2.3 “nv\_procedures”:

Description = contains 10 SQL programs for Nevada state used to calculate metrics for the year 2016.

Nested folders = 0

1.5.2.4 “usa\_procedures”:

Description = contains 10 SQL programs for the U.S.A. used to calculate metrics for the year 2016.

Nested folders = 0

1.5.2.5 “ut\_procedures”:

Description = contains 10 SQL programs for Utah state used to calculate metrics for the year 2016.

Nested folders = 0

1.6 “Research\_2017Database”:

Description= containing all raw data, SQL procedures and metrics for the year 2017.

Nested Folders= 2:

1.6.1 “Data\_EXCEL”:

Description = contains all data including online raw data and cleaned & summarized data from MySQL.

Nested folders = 10:

1.6.1.1 “2017\_data\_az”:

Description = 6 files with raw 2017 data for Arizona state; sources: QCEW (Quarterly Census of Employment and Wages), NES (Non-Employer Statistics), Economic Census and BEA (Bureau of Economic Analysis).

Nested folders = 0

1.6.1.2 “2017\_data\_ca”:

Description = 11 files with raw 2017 data for California state; sources: QCEW (Quarterly Census of Employment and Wages), NES (Non-Employer Statistics), Economic Census and BEA (Bureau of Economic Analysis).

Nested folders = 0

1.6.1.3 “2017\_data\_nv”:

Description = 6 files with raw 2017 data for Nevada state; sources: QCEW (Quarterly Census of Employment and Wages), NES (Non-Employer Statistics), Economic Census and BEA (Bureau of Economic Analysis).

Nested folders = 0

1.6.1.4 “2017\_data\_usa”:

Description = 6 files with raw 2017 data for the whole USA; sources: QCEW (Quarterly Census of Employment and Wages), NES (Non-Employer Statistics), Economic Census and BEA (Bureau of Economic Analysis).

Nested folders = 0

1.6.1.5 “2017\_data\_ut”:

Description = 6 files with raw 2017 data for Arizona state; sources: QCEW (Quarterly Census of Employment and Wages), NES (Non-Employer Statistics), Economic Census

and BEA (Bureau of Economic Analysis).

Nested folders = 0

1.6.1.6 “2017\_metrics\_az”:

Description = contains 6 csv files with processed 2017 data for Arizona state, yielding the following metrics: financial performance measures, workforce statistics and overall economic performance.

Nested folders = 0

1.6.1.7 “2017\_metrics\_ca”:

Description = contains 12 csv files with processed 2017 data for California state, yielding the following metrics: financial performance measures, workforce statistics and overall economic performance. The trucking industry is manipulated together with the other data and also singularly.

Nested folders = 0

1.6.1.8 “2017\_metrics\_nv”:

Description = contains 6 csv files with processed 2017 data for Nevada state, yielding the following metrics: financial performance measures, workforce statistics and overall economic performance.

Nested folders = 0

1.6.1.9 “2017\_metrics\_usa”:

Description = contains 6 csv files with processed 2017 data for the U.S.A, yielding the following metrics: financial performance measures, workforce statistics and overall economic performance.

Nested folders = 0

1.6.1.10 “2017\_metrics\_ut”:

Description = contains 6 csv files with processed 2017 data for Utah state, yielding the following metrics: financial performance measures, workforce statistics and overall economic performance.

Nested folders = 0

1.6.2 “Data\_MySQL”:

Description = contains the MySQL procedures needed to manipulate raw data tables and yield results for 2017.

Nested folders = 5:

1.6.2.1 “az\_procedures”:

Description = contains 8 SQL programs for Arizona state used to calculate metrics for the year 2017.

Nested folders = 0

1.6.2.2 “ca\_procedures”:

Description = contains 9 SQL programs for California state used to calculate metrics for the year 2017.

Nested folders = 0

1.6.2.3 “nv\_procedures”:

Description = contains 8 SQL programs for Nevada state used to calculate metrics for the year 2017.

Nested folders = 0

1.6.2.4 “usa\_procedures”:

Description = contains 8 SQL programs for the U.S.A. used to calculate metrics for the year 2017.

Nested folders = 0

1.6.2.5 “ut\_procedures”:

Description = contains 8 SQL programs for Utah state used to calculate metrics for the year 2017.

Nested folders = 0

1.7 “Research\_2018Database”:

Description= containing all raw data, SQL procedures and metrics for the year 2018.

Nested Folders= 2:

1.7.1 “Data\_EXCEL”:

Description = contains all data including online raw data and cleaned & summarized data from MySQL.

Nested folders = 10:

1.7.1.1 “2018\_data\_az”:

Description = 3 files with raw 2018 data for Arizona state; sources: QCEW (Quarterly Census of Employment and Wages), NES (Non-Employer Statistics) and BEA (Bureau of Economic Analysis).

Nested folders = 0

1.7.1.2 “2018\_data\_ca”:

Description = 4 files with raw 2018 data for California state; sources: QCEW (Quarterly Census of Employment and Wages), NES (Non-Employer Statistics) and BEA (Bureau of Economic Analysis).

Nested folders = 0

1.7.1.3 “2018\_data\_nv”:

Description = 3 files with raw 2018 data for Nevada state; sources: QCEW (Quarterly Census of Employment and Wages), NES (Non-Employer Statistics) and BEA (Bureau of Economic Analysis).

Nested folders = 0

1.7.1.4 “2018\_data\_usa”:

Description = 3 files with raw 2018 data for the whole USA; sources: QCEW (Quarterly Census of Employment and Wages), NES (Non-Employer Statistics) and BEA (Bureau of Economic Analysis).

Nested folders = 0

1.7.1.5 “2018\_data\_ut”:

Description = 3 files with raw 2018 data for Arizona state; sources: QCEW (Quarterly Census of Employment and Wages), NES (Non-Employer Statistics) and BEA (Bureau of Economic Analysis).

Nested folders = 0

1.7.1.6 “2018\_metrics\_az”:

Description = contains 6 csv files with processed 2018 data for Arizona state, yielding the following metrics: financial performance measures, workforce statistics and overall economic performance

Nested folders = 0

1.7.1.7 “2018\_metrics\_ca”:

Description = contains 12 csv files with processed 2018 data for California state, yielding the following metrics: financial performance measures, workforce statistics and overall economic performance. The trucking industry is manipulated together with the other data and also singularly.

Nested folders = 0

1.7.1.8 “2018\_metrics\_nv”:

Description = contains 6 csv files with processed 2018 data for Nevada state, yielding the following metrics: financial performance measures, workforce statistics and overall economic performance.

Nested folders = 0

1.7.1.9 “2018\_metrics\_usa”:

Description = contains 6 csv files with processed 2018 data for the U.S.A, yielding the following metrics: financial performance measures, workforce statistics and overall economic performance.

Nested folders = 0

1.7.1.10 “2018\_metrics\_ut”:

Description = contains 6 csv files with processed 2018 data for Utah state, yielding the following metrics: financial performance measures, workforce statistics and overall economic performance.

Nested folders = 0

1.7.2 “Data\_MySQL”:

Description = contains the MySQL procedures needed to manipulate raw data tables and yield results for 2018.

Nested folders = 5:

1.7.2.1 “az\_procedures”:

Description = contains 7 SQL programs for Arizona state used to calculate metrics for the year 2018.

Nested folders = 0

1.7.2.2 “ca\_procedures”:

Description = contains 8 SQL programs for California state used to calculate metrics for the year 2018.

Nested folders = 0

1.7.2.3 “nv\_procedures”:

Description = contains 7 SQL programs for Nevada state used to calculate metrics for the year 2018.

Nested folders = 0

1.7.2.4 “usa\_procedures”:

Description = contains 7 SQL programs for the U.S.A. used to calculate metrics for the year 2018.

Nested folders = 0

1.7.2.5 “ut\_procedures”:

Description = contains 7 SQL programs for Utah state used to calculate metrics for the year 2018.

Nested folders = 0

2. “overUSA”:

Description = 129 KB folder containing all the metrics of each state over the whole U.S.A., for a total of 19 files.

Nested folders = 1:

2.1 “separate forms”:

Description= 16 csv files containing the final tables showing each state’s share of the total US economy for the years 2015-2018.

Nested Folders= 0

3. “summarized statistics”:

Description = 9.45 MB folder containing data summaries, resources, official reports and presentations, for a total of 22 files.

Nested folders = 1:

3.1 “Presentation”:

Description= contains all the summary tables used to prepare the 2020 and PPT presentations

Nested Folders= 0