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Website

Preparing and Submitting Files for Export

Expectations

At the conclusion of this training you should know how to:

1. Create all the necessary supporting files for each export file.
2. Create the proper documentation.
3. Navigate the export application.

Motivation and Outline

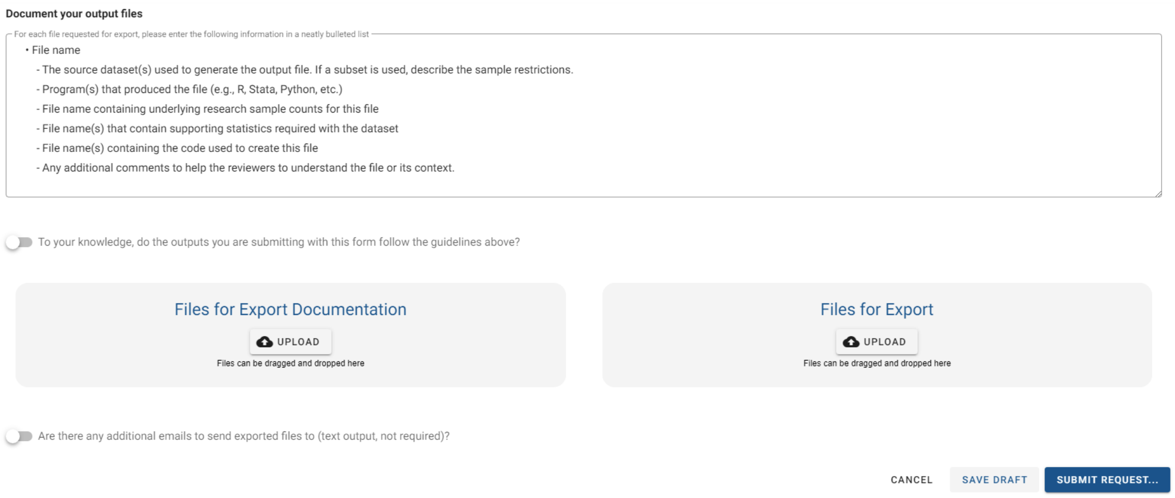
This presentation will walk you through how to prepare files for the export process. By no means is this list exhaustive. You can apply the techniques you learn here to the files you wish to export. This presentation is a general, high-level overview of the export process where we use publicly available data. This is not dataset-specific, and if you need specific examples the presentation prep notebook is a great resource.

1. How to prepare an export
    - Creating all necessary files
2. How to submit an export using the files we created
    - Export module

What is needed in an export?

1. Files for Export

    - The files you want outside of the ADRF
2. Files for Export Documentation
    - These are the supporting files that contain the underlying and non-rounded counts, data, and code used to create the files for export
3. Documentation Memo
    - This is generally a .txt or .doc file that contains detailed information about each file for export and its corresponding files for export documentation



Document your output files

For each file requested for export, please enter the following information in a neatly bulleted list

- File name
  - The source dataset(s) used to generate the output file. If a subset is used, describe the sample restrictions.
  - Program(s) that produced the file (e.g., R, Stata, Python, etc.)
  - File name containing underlying research sample counts for this file
  - File name(s) that contain supporting statistics required with the dataset
  - File name(s) containing the code used to create this file
  - Any additional comments to help the reviewers to understand the file or its context.

To your knowledge, do the outputs you are submitting with this form follow the guidelines above?

Are there any additional emails to send exported files to (text output, not required)?

Files for Export Documentation
UPLOAD
Files can be dragged and dropped here
Files for Export
UPLOAD
Files can be dragged and dropped here
CANCEL
SAVE DRAFT
SUBMIT REQUEST...

Submitting a Proper Export

It is important to focus on the files for export documentation first. The reasons being are 1) this will dictate what you are allowed to export, and 2) you know what the desired tables and output will be. In reality, these steps are done in tandem because the underlying counts can limit what you are allowed to export.

The following supporting files for export documentation and documentation memo must accompany all files for export:

- The underlying counts/tables that created the table or graph that you wish to export
- A documentation memo that includes:
    - Export file name
    - Name of the supporting files that contain the required counts for each reported statistic
    - Grouping and filters applied to the original dataset
    - How the export file relates to other files within the same export

> Note: If there are multiple variables subject to disclosure review, you can include the counts for them in the same file.

In [1]:

```
library(tidyverse)
library(R.utils)
library(ggplot2)
```

```
Warning message:
“replacing previous import ‘ellipsis::check_dots_unnamed’ by ‘rlang::check_dot
s_unnamed’ when loading ‘tibble’”
Warning message:
“replacing previous import ‘ellipsis::check_dots_used’ by ‘rlang::check_dots_u
sed’ when loading ‘tibble’”
Warning message:
“replacing previous import ‘ellipsis::check_dots_empty’ by ‘rlang::check_dots_
empty’ when loading ‘tibble’”
── Attaching packages ─────────────────────────────────────── tidyverse 1.3.0
 ──

✔ ggplot2 3.3.2     ✔ purrr   0.3.4
✔ tibble  3.0.3     ✔ dplyr   1.0.1
✔ tidyr   1.1.1     ✔ stringr 1.4.0
✔ readr   1.3.1     ✔ forcats 0.5.0

── Conflicts ────────────────────────────────────────── tidyverse_conflicts()
 ──
✖ dplyr::filter() masks stats::filter()
✖ dplyr::lag()    masks stats::lag()

Loading required package: R.oo

Loading required package: R.methodsS3

R.methodsS3 v1.8.0 (2020-02-14 07:10:20 UTC) successfully loaded. See ?R.metho
dsS3 for help.

R.oo v1.23.0 successfully loaded. See ?R.oo for help.


Attaching package: ‘R.oo’


The following object is masked from ‘package:R.methodsS3’:

    throw


The following objects are masked from ‘package:methods’:

    getClasses, getMethods


The following objects are masked from ‘package:base’:

    attach, detach, load, save


R.utils v2.9.2 successfully loaded. See ?R.utils for help.


Attaching package: ‘R.utils’


The following object is masked from ‘package:tidyr’:

    extract
```

```
The following object is masked from ‘package:utils’:

    timestamp


The following objects are masked from ‘package:base’:

    cat, commandArgs, getOption, inherits, isOpen, nullfile, parse,
    warnings
```

In [2]:

```
co_xwalk <- read_csv("co_xwalk.csv")

co_wac_2019 <- read_csv('co_wac_S000_JT00_2019.csv')

co_rac_2019 <- read_csv('co_rac_S000_JT00_2019.csv')
```

```
Parsed with column specification:
cols(
  .default = col_character(),
  cbsa = col_double(),
  zcta = col_double(),
  zctaname = col_double(),
  stsecon = col_double(),
  stseconname = col_logical(),
  tsub = col_double(),
  tsubname = col_logical(),
  stanrc = col_double(),
  stanrcname = col_logical(),
  necta = col_double(),
  nectaname = col_logical(),
  mil = col_double(),
  blklatdd = col_double(),
  blklondd = col_double(),
  createdate = col_double()
)

See spec(...) for full column specifications.

Parsed with column specification:
cols(
  .default = col_double(),
  w_geocode = col_character()
)

See spec(...) for full column specifications.

Parsed with column specification:
cols(
  .default = col_double(),
  h_geocode = col_character()
)

See spec(...) for full column specifications.
```

In [3]:

```
df_inner_join <- inner_join(co_xwalk, co_wac_2019, by = c("tabblk2010" = "w_geo
    select (tabblk2010, C000, CA01, CA02, CA03, ctyname, cbsaname) %>%
    filter(C000 > 10)
```

How to prepare an export

In [4]:

```
total_jobs_by_county <- df_inner_join %>%
    group_by(ctyname) %>% #grouping by county name
    summarize(
        total_jobs = sum(C000)
    ) %>%
    ungroup()  %>% # cant forget to ungroup()
    arrange(desc(total_jobs))

head(total_jobs_by_county)
```

```
`summarise()` ungrouping output (override with `.groups` argument)
```

A tibble: 6 × 2

ctyname	total_jobs
<chr>	<dbl>
Denver County, CO	518198
Arapahoe County, CO	329681
El Paso County, CO	258298
Jefferson County, CO	244706
Adams County, CO	222035
Boulder County, CO	177153

In [5]:

```
# the census block is the disclosure unit of focus so we need to include that.

total_jobs_by_county <- df_inner_join %>%
    group_by(ctyname) %>% #grouping by county name
    summarize(
        total_jobs = sum(C000), #summing the column C000
        census_block_count = n_distinct(tabblk2010) #getting counts of census b
    ) %>%
    ungroup()  %>% # cant forget to ungroup()
    arrange(desc(total_jobs))

head(total_jobs_by_county)
```

```
`summarise()` ungrouping output (override with `.groups` argument)
```

A tibble: 6 × 3

ctyname	total_jobs	census_block_count
<chr>	<dbl>	<int>
Denver County, CO	518198	2484
Arapahoe County, CO	329681	1435
El Paso County, CO	258298	2248
Jefferson County, CO	244706	1636
Adams County, CO	222035	1234
Boulder County, CO	177153	1135

Export 1

Bar Plot

In [6]:

```
# calculating the proportion of jobs for each county

total_jobs_prop <- total_jobs_by_county %>%
    arrange(desc(total_jobs)) %>%
    mutate(
        prop = total_jobs/sum(total_jobs)*100) # calculating proportions
head(total_jobs_prop)
```

A tibble: 6 × 4

ctyname	total_jobs	census_block_count	prop
<chr>	<dbl>	<int>	<dbl>
Denver County, CO	518198	2484	20.189302
Arapahoe County, CO	329681	1435	12.844567
El Paso County, CO	258298	2248	10.063443
Jefferson County, CO	244706	1636	9.533891
Adams County, CO	222035	1234	8.650615
Boulder County, CO	177153	1135	6.901986

Now that we have the proportion calculated, we need to apply rounding rules.

Rounding Rules

Percentages, proportions and ratios need to be rounded - you must apply the rounding rules first to the true numerator and denominator before calculating any proportions. Once the proportions are calculated, they must be rounded to the nearest hundredth (.01) or the nearest percent if using whole numbers (1%).

Because we have counts of jobs, we need to apply appropriate rounding rules. Counts between 0-999 must be rounded to the nearest 10 and counts above 999 to the nearest

100.

In [7]:

```
total_jobs_prop_rounded <- total_jobs_prop %>%
    mutate(
        total_jobs_rounded = ifelse(total_jobs < 1000, #applying rounding rules
                                    round(total_jobs, digits = -1),
                                    round(total_jobs, digits = -2)),
    prop_rounded = round(total_jobs_rounded/sum(total_jobs_rounded),2) *100)

head(total_jobs_prop_rounded)
```

A tibble: 6 × 6

ctyname	total_jobs	census_block_count	prop	total_jobs_rounded	prop_rounded
<chr>	<dbl>	<int>	<dbl>	<dbl>	<dbl>
Denver County, CO	518198	2484	20.189302	518200	20
Arapahoe County, CO	329681	1435	12.844567	329700	13
El Paso County, CO	258298	2248	10.063443	258300	10
Jefferson County, CO	244706	1636	9.533891	244700	10
Adams County, CO	222035	1234	8.650615	222000	9
Boulder County, CO	177153	1135	6.901986	177200	7

Since we are showing the top 6 counties with the most jobs, we need to include the totals for the columns `total_jobs` and `total_jobs_rounded` to show how we calculated the proportions. We will add a row called `Total` with the sum of these 2 columns.

In [8]:

```
total_df <- total_jobs_prop_rounded %>%
    summarize(total_jobs = sum(total_jobs),
              census_block_count = sum(census_block_count),
              prop = sum(census_block_count)/sum(census_block_count)*100,
              total_jobs_rounded = sum(total_jobs_rounded),
              prop_rounded = sum(total_jobs_rounded)/sum(total_jobs_rounded)*10

total_df <- cbind(ctyname = 'Total', total_df)
```

In [9]:

```
total_jobs_prop_rounded_w_total <- total_jobs_prop_rounded %>%
    head() %>%
    rbind(total_df)
total_jobs_prop_rounded_w_total
```

A tibble: 7 × 6

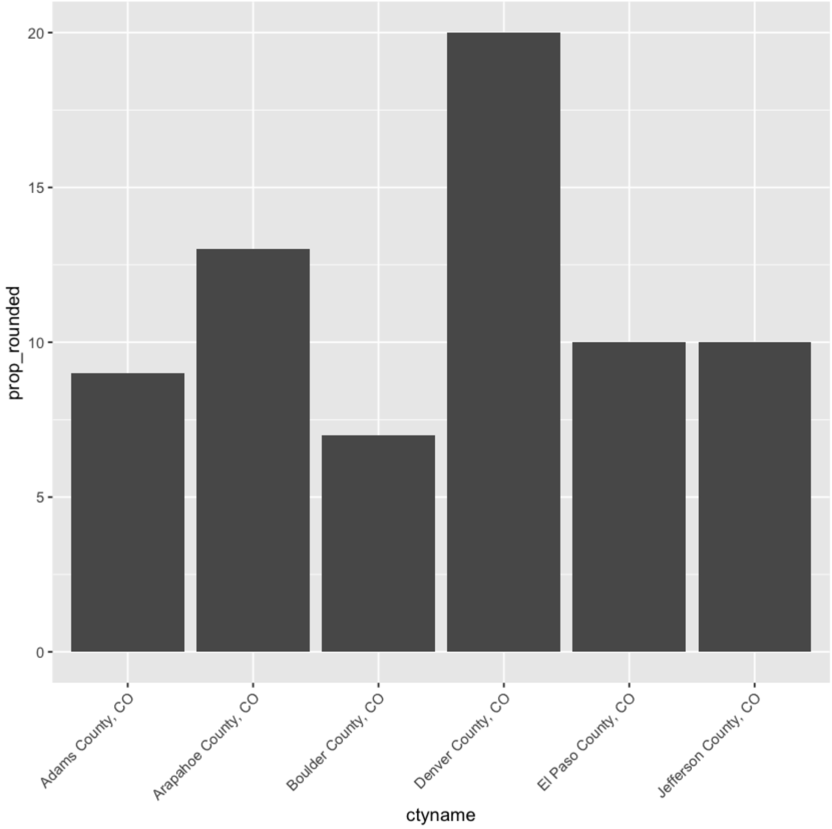
ctyname <chr>	total_jobs <dbl>	census_block_count <int>	prop <dbl>	total_jobs_rounded <dbl>	prop_rounded <dbl>
Denver County, CO	518198	2484	20.189302	518200	20
Arapahoe County, CO	329681	1435	12.844567	329700	13
El Paso County, CO	258298	2248	10.063443	258300	10
Jefferson County, CO	244706	1636	9.533891	244700	10
Adams County, CO	222035	1234	8.650615	222000	9
Boulder County, CO	177153	1135	6.901986	177200	7
Total	2566696	18887	100.000000	2566940	100

Creating Bar Plot

In [10]:

```
# Basic barplot
ggplot(data=total_jobs_prop_rounded %>% head(), aes(x=ctyname, y=prop_rounded))
    geom_bar(stat="identity") +
    theme(axis.text.x = element_text(angle = 45, hjust = 1))
ggsave("export_1_bar_plot.png")
```

```
Saving 7 x 7 in image
```



When we submit the bar plot for export, we need to show the non-rounded counts for each proportion, the counts for each census block, the rounded counts that generated the proportions, and the final rounded proportions and save the resulting data frame. We ask for this because the export team needs to verify that the proper rounding rules are applied.

In [11]:
```
total_jobs_prop_rounded_w_total %>% write_csv("export_1_counts_for_bar_plot.csv
total_jobs_prop_rounded_w_total
```

A tibble: 7 × 6

ctyname	total_jobs	census_block_count	prop	total_jobs_rounded	prop_rounded
<chr>	<dbl>	<int>	<dbl>	<dbl>	<dbl>
Denver County, CO	518198	2484	20.189302	518200	20
Arapahoe County, CO	329681	1435	12.844567	329700	13
El Paso County, CO	258298	2248	10.063443	258300	10
Jefferson County, CO	244706	1636	9.533891	244700	10
Adams County, CO	222035	1234	8.650615	222000	9
Boulder County, CO	177153	1135	6.901986	177200	7
Total	2566696	18887	100.000000	2566940	100

Export 2

Exporting a Quantile - Median

Now, using the same data, we are interested in calculating the median number of jobs per census block in each county.

In [12]:

```
median_jobs_per_census_block <- df_inner_join %>%
    group_by(ctyname) %>%
    summarize(
        median_jobs_census_block = median(C000) #calculating the median
    ) %>% arrange(desc(median_jobs_census_block)) %>%
    head()

median_jobs_per_census_block
```

```
`summarise()` ungrouping output (override with `.groups` argument)
```

A tibble: 6 × 2

ctyname	median_jobs_census_block
<chr>	<dbl>
Gilpin County, CO	83.5
Crowley County, CO	75.0
Arapahoe County, CO	56.0
Denver County, CO	55.0
Adams County, CO	48.0
Boulder County, CO	47.0

In [13]:

```
median_jobs_per_census_block <- df_inner_join %>%
    group_by(ctyname) %>%
    summarize(
        median_jobs_census_block = median(C000), #calculating the median
        count_census_block = n_distinct(tabblk2010) #variable for disclosure re
    ) %>% arrange(desc(median_jobs_census_block)) %>%
    head()

median_jobs_per_census_block
```

```
`summarise()` ungrouping output (override with `.groups` argument)
```

A tibble: 6 × 3

ctyname	median_jobs_census_block	count_census_block
<chr>	<dbl>	<int>
Gilpin County, CO	83.5	24
Crowley County, CO	75.0	9
Arapahoe County, CO	56.0	1435
Denver County, CO	55.0	2484
Adams County, CO	48.0	1234
Boulder County, CO	47.0	1135

We have calculated the median number of jobs per census block. But we can't export the true median because it may be a data point. Instead, we can export the fuzzy median. We also need to apply the rounding rules after calculating the fuzzy median.

Exact percentiles can not be exported - instead, for example, you may calculate a “fuzzy median” by averaging the true 45th and 55th percentiles.

In [14]:

```r
fuzzy_median_jobs_per_census_block <- df_inner_join %>%
    group_by(ctyname) %>%
    summarize(
        median_jobs_census_block = median(C000),
        fuzzy_median_jobs = ((quantile(C000, .45) + quantile(C000, .55))/2), #c
        count_census_block = n_distinct(tabblk2010) #variable for disclosure re
    ) %>%
    mutate(
        fuzzy_median_jobs_rounded = round(fuzzy_median_jobs, digits = -1)) %>%
    arrange(desc(median_jobs_census_block)) %>%
    head()

fuzzy_median_jobs_per_census_block
```

```
`summarise()` ungrouping output (override with `.groups` argument)
```

A tibble: 6 × 5

ctyname	median_jobs_census_block	fuzzy_median_jobs	count_census_block	fuzzy_median_j
<chr>	<dbl>	<dbl>	<int>	
Gilpin County, CO	83.5	73.425	24	
Crowley County, CO	75.0	76.200	9	
Arapahoe County, CO	56.0	57.500	1435	
Denver County, CO	55.0	55.500	2484	
Adams County, CO	48.0	50.075	1234	
Boulder County, CO	47.0	47.500	1135	

We see that we have a count below 10 for Crowley County, CO. This means we have to redact the `fuzzy_median_jobs_rounded` value for that record. We will replace any value fewer than 9 with `NA`.

In [15]:

```
export_median_jobs_fuzzy_rounded <- fuzzy_median_jobs_per_census_block %>%
    mutate(fuzzy_median_jobs_rounded = ifelse( #applying rounding rules
            count_census_block < 10,
               fuzzy_median_jobs_rounded == NA,
               fuzzy_median_jobs_rounded)) %>%
    select(ctyname, fuzzy_median_jobs_rounded)

export_median_jobs_fuzzy_rounded
```

A tibble: 6 × 2

ctyname	fuzzy_median_jobs_rounded
<chr>	<dbl>
Gilpin County, CO	70
Crowley County, CO	NA
Arapahoe County, CO	60
Denver County, CO	60
Adams County, CO	50
Boulder County, CO	50

Now that we have applied the rounding rules and created the supporting table with the underlying counts, we need to save both data frames.

In [16]:

```
fuzzy_median_jobs_per_census_block %>% write_csv("export_2_data.csv")
export_median_jobs_fuzzy_rounded %>% write_csv("export_2_fuzzy_median_jobs.csv'
```

Documentation File

Check out Documentation Example

ADRF User Guide

The user guide is a great reference for the export process or using the ADRF.

Check out ADRF User Guide

Export Module Video Walk-through

In [17]:

```
# jupyter nbconvert Export_training.ipynb --to slides --post serve --no-input
# jupyter nbconvert Export_training.ipynb --to pdf
```

In [18]:

```
# pip install --user jupyter_contrib_nbextensions
# jupyter contrib nbextension install --user
# pip install --user jupyter_nbextensions_configurator
# jupyter nbextensions_configurator enable --user
```