4.4) U.S. RISK FACTORS AND HEALTH OUTCOMES

Objective: This data-gathering exercise highlights the major health issues in the developed world and allows you to look for correlation between risk factors to health outcomes. **Video instructions:** https://vimeo.com/836251081

Introduction: When the Centers for Disease Control and Prevention (CDC) was created in 1946, most of the key positions were held by entomologists. This can be attributed to its original focus on fighting malaria. Today, the CDC has expanded its mission well beyond infectious disease to include chronic disease, injuries, workplace hazards, disabilities, and environmental health threats.

The CDC is supported in part through the "CDC Foundation;" a non-profit authorized by congress to supplement the CDC budget through private sector donations. During the COVID-19 emergency, the CDC recommended the closing of schools and the inclusion of novel RNA vaccines to the childhood immunization schedule. These controversial recommendations raised concerns that the CDC Foundation had become little more than a "lobby" for the implementation of policies that served special interests. This loss of trust may have played a role in the premature resignation of CDC director Rochelle Wallensky, but nothing short of overhaul or elimination of the CDC Foundation will restore trust in the public institution this private foundation was meant to serve.

Website Navigation:

1) Go to the Centers for Disease Control website: www.cdc.gov

2) To collect data on risk factors, open the link for "Data & Statistics", then open the link for "Overweight and Obesity."

3) Scroll down below the map to "Additional Resources" and then click on "Behavioral Risk Factor Surveillance System (BRFSS)." This page offers a wide variety of risk factor data options.

Risk Factor Data Collection and Spreadsheet Creation:

1) Under the heading for "Prevalence Data and Data Analysis Tools" open the link for "Prevalence and Trends Data." This takes you to an interactive website.
   Here is the direct link: https://www.cdc.gov/brfss/brfssprevalence/index.html

2) In the interactive box, make the following choices:

   a. In the box for "States & Territories" choose "All States and DC."
   b. In the box for "Class" choose "Overweight and Obesity."
   c. In the box for "Topic" Choose "BMI Categories."
   d. Click on "Go."

3) Make the following choices in the next set of boxes that appear:

   a. For "Year," choose most recent year data was collected.
   b. For "View" choose "Overall."
   c. For "Response" choose "Obese."
   d. For "Data type" choose "Age-adjusted Prevalence."

4) Go to the upper right corner of the page and open the indicated icon to see the data in spreadsheet format (Fig. 1).

5) Open the indicated icon to download the spreadsheet (Fig. 2 and 3).
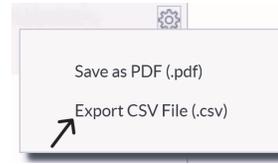
Fig. 1   **Fig. 2**   **Fig. 3**

6) Your downloaded spreadsheet should look something like this (Fig. 4). The columns indicated with arrows are the only ones you need (Fig. 5). Proceed to simplify your spreadsheet by removing all the other columns and rows (Fig. 6).

	A	B	C	D	E	F	G	H	I	J	K	L
1	ID	Year	LocationA	LocationD	Class	Topic	Indicator	Response	DataSourc	Data_Valu	Data_Valu	Data_Valu
2	4619594	2021	AL	Alabama	Overweigh	BMI Categ	Weight cla	Obese (BN	BRFSS	%	Age-adjus	40.4
3	4617391	2021	AL	Alabama	Overweigh	BMI Categ	Weight cla	Overweigh	BRFSS	%	Age-adjus	31
4	4615517	2021	AL	Alabama	Overweigh	BMI Categ	Weight cla	Normal W	BRFSS	%	Age-adjus	26.9
5	4614626	2021	AL	Alabama	Overweigh	BMI Categ	Weight cla	Underwei	BRFSS	%	Age-adjus	1.8

Fig. 4

	A	B	C	D	E	F	G	H	I	J	K	L
1	ID	Year	LocationA	LocationD	Class	Topic	Indicator	Response	DataSourc	Data_Valu	Data_Valu	Data_Valu
2	4619594	2021	AL	Alabama	Overweigh	BMI Categ	Weight cla	Ob (BN	BRFSS	%	Age-adjus	4
3	4617391	2021	AL	Alabama	Overweigh	BMI Categ	Weight cla	Overweigh	BRFSS	%	Age-adjus	31
4	4615517	2021	AL	Alabama	Overweigh	BMI Categ	Weight cla	Normal W	BRFSS	%	Age-adjus	26.9
5	4614626	2021	AL	Alabama	Overweigh	BMI Categ	Weight cla	Underwei	BRFSS	%	Age-adjus	1.8

Fig. 5

	A	B	C
1	LocationDesc	Response	Data_Value
2	Alabama	Obese (BMI 30.0 - 99.8)	40.4
3	Alabama	Overweight (BMI 25.0-29.9)	31
4	Alabama	Normal Weight (BMI 18.5-24.9)	26.9
5	Alabama	Underweight (BMI 12.0-18.4)	1.8

Fig. 6

7) Use the "Sort & Filter" function on your spreadsheet to arrange your data in terms of the "Response" column (Fig. 7).

8) Proceed to remove all rows other than those with the "Obese" response (Fig. 8).

9) Finally, replace the "Data Value" column label with "Obese" and remove the "Response" column. Your spreadsheet should now have only two columns (Fig. 9).

	A	B	C
1	LocationDesc	Response	Data_Value
2	Alabama	Normal Weight (BMI 18.5-24.9)	26.9
3	Alaska	Normal Weight (BMI 18.5-24.9)	31.2

Fig. 7

	A	B	C
1	LocationDesc	Response	Data_Value
2	Alabama	Obese (BMI 30.0 - 99.8)	40.4
3	Alaska	Obese (BMI 30.0 - 99.8)	33.4

Fig. 8

	A	B
1	LocationDesc	obese
2	Alabama	40.4
3	Alaska	33.4

Fig. 9

10) Go back to the link for "Prevalence and Trends Data" (step 1).

11) In the interactive box, make the following choices:

    a. In the box for "States & Territories" choose "All States and DC."
    b. In the box for "Class" choose "Physical Activity."
    c. In the box for "Topic" Choose "Exercise."
    d. Click on "Go."

12) Make the following choices in the next set of boxes that appear:

    a. For "Year," choose most recent year data was collected.
    b. For "View" choose "Overall."

    c.   For "Response" choose "Yes."

    d.   For "Data type" choose "Age-adjusted Prevalence."

13) Download the spreadsheet as you previously did in steps 4 and 5, and proceed to simplify by removing all but the indicated columns (Fig 10) and use the "Yes" response for your final spreadsheet to indicate "exercise" (Fig 11).

	A	B	C	D	E	F	G	H	I	J	K	L
1	ID	Year	LocationA	LocationD	Class	Topic	Indicator	Response	DataSourc	Data_Valu	Data_Valu	Data_Valu
2	4619373	2021	AL	Alabama	Physical A	Exercise	During the	Yes	BRFSS	%	Age-adjus	
3	4617988	2021	AL	Alabama	Physical A	Exercise	During the	No	BRFSS	%	Age-adjus	29.8
4	4614841	2021	AK	Alaska	Physical A	Exercise	During the	Yes	BRFSS	%	Age-adjus	79.9
5	4616129	2021	AK	Alaska	Physical A	Exercise	During the	No	BRFSS	%	Age-adjus	20.1

Fig. 10

	A	B
1	LocationDesc	exercise
2	Alabama	70.2
3	Alaska	79.9

Fig. 11

14) Go back to the link for "Prevalence and Trends Data" (step 1).

15) In the interactive box, make the following choices:

    a.   In the box for "States & Territories" choose "All States and DC."

    b.   In the box for "Class" choose "Chronic Health Indicators."

    c.   In the box for "Topic" Choose "Cardiovascular Disease."

    d.   Click on "Go."

16) Make the following choices in the next set of boxes that appear:

    a.   For "Year," choose most recent year data was collected.

    b.   For "View" choose "Overall."

    c.   For "Response" choose "Yes."

    d.   For "Data type" choose "Age-adjusted Prevalence."

17) Download the spreadsheet as you previously did in steps 4 and 5, and proceed to simplify by removing all but the three columns just as before and use the "Yes" response for your final spreadsheet to indicate "cardiovascular" (Fig 12).

18) Go back to the link for "Prevalence and Trends Data" (step 1).

19) In the interactive box, make the following choices:

    a.   In the box for "States & Territories" choose "All States and DC."

    b.   In the box for "Class" choose "Tobacco Use."

    c.   In the box for "Topic" Choose "Smoker Status."

    d.   Click on "Go."

20) Make the following choices in the next set of boxes that appear:

    a.   For "Year," choose most recent year data was collected.

    b.   For "View" choose "Overall."

    c.   For "Response" choose "Smoke every day."

    d.   For "Data type" choose "Age-adjusted Prevalence."

21) Download the spreadsheet as you previously did in steps 4 and 5, and proceed to simplify by removing all but the three columns just as before and use the "Smoke everyday" response for your final spreadsheet to indicate "smoke" (Fig 13).

	A	B
1	LocationDesc	cardiovasc.
2	Alabama	4.7
3	Alaska	3

Fig. 12

	A	B
1	LocationDesc	smoke
2	Alabama	12.7
3	Alaska	12.7

Fig. 13

22) Copy and paste all data columns into one spreadsheet (Fig. 14) and make sure the states in all the columns line up from top to bottom.

23) Remove unnecessary columns (Fig. 15).

	A	B	C	D	E	F	G	H
1	Location	exercise	Location	obese	Location	cardiovasc.	Location	smoke
2	Alabama	70.2	Alabama	40.4	Alabama	4.7	Alabama	12.7
3	Alaska	79.9	Alaska	33.4	Alaska	3	Alaska	12.7

Fig. 14

	A	B	C	D	E
1	Location	exercise	obese	cardiovasc.	smoke
2	Alabama	70.2	40.4	4.7	12.7
3	Alaska	79.9	33.4	3	12.7

Fig. 15

24) Follow the video instructions provided by your instructor to make following four graphs:

    a. Exercise Frequency versus Obesity Rate
    b. Exercise Frequency versus Cardiovascular Disease
    c. Smoking versus Cardiovascular Disease
    d. Smoking versus Obesity

Cancer Outcomes in the U.S.:

1. Go to the CDC Wonder interactive website: https://wonder.cdc.gov/Welcome.html

2. Open "Cancer Statistics."

3. Under "Cancer Incidence 1999-2019," open the "Data Request." link: https://wonder.cdc.gov/cancer-v2019.HTML

4. In Box 1 (Organize Table Layout), choose "States" and "Age-Adjusted Rates."

5. In Box 4 (Table Layout), choose "Lung and Bronchus."

6. Scroll to the bottom and click on "Send."

7. Follow the instructions provided by your instructor to copy and paste lung cancer rates into your spreadsheet (Fig. 16) and use this to create a graph on smoking versus lung cancer.

	A	B	C	D	E	F
1	Location	exercise	obese	cardiovasc.	smoke	lung cancer
2	Alabama	70.2	40.4	4.7	12.7	70.6
3	Alaska	79.9	33.4	3	12.7	64.6

Fig. 16

8. Go back to the previous page to create a new chart.

9. In Box 1, choose "Race" and "Age-Adjusted Rates."

10. Do five separate searches based on the following four options in Box 4:

    a. Melanoma of the Skin
    b. Myeloma
    c. Prostate
    d. Female Breast
    e. Liver

11. Record all race-based cancer rates to the chart:

Cancer Rates

	Melanoma	Myeloma	Prostate	Fem. Breast	Liver
Asian or Pacific Is.					
Black or Afr. Amer.					
White					

Vaccine Adverse Event Reporting:

1. Go to the CDC Wonder interactive website: https://wonder.cdc.gov/Welcome.html

2. Open "Vaccine Adverse Event Reporting."

3. Click on the link acknowledging that you read the disclaimer to enter the Vaccine Adverse Event Reporting System. Direct link: https://wonder.cdc.gov/controller/datarequest/D8

4. Open "VAERS Data Search."

5. In Box 1 (Organize table layout), choose "Year of Onset."

6. In Box 5 (Select other event characteristics), choose "Death."

7. Scroll to the bottom and click on "Send."

8. Record numbers of reported deaths to the table under "Deaths at all ages."

9. Go back to the previous page to do a new search.

10. For Box 1, choose "Year of Onset." For Box 5, choose "Congenital anomaly/Birth Defect," and click "Send."

11. Record numbers of reported birth defects to the table under "Birth Defects."

12. Go back to the previous page to do a new search.

13. For Box 1, choose "Year of Onset." For Box 4 (Select location, age, gender) choose both "≤6 months" and "6-11 months." For Box 5, choose "death," and click "Send."

14. Record numbers of vaccine-caused deaths to the table under "Deaths for <1 year old."

Adverse Events Reported to VAERS

	2015	2016	2017	2018	2019	2020	2021
Deaths at all ages							
Birth Defects							
Deaths for < 1 year old							

Questions:

1. Based on your graphs, is there any correlation that probably does not demonstrate a direct cause and effect? If yes, what is the third variable that might be responsible for the correlation between x and y?

2. Which cancer or cancers disproportionately affect the following groups:

   a. Asian/Pacific Islander

   b. Black/African American

   c. White

3. Why is it necessary to check the box for "age adjusted"? What is the problem with not adjusting for age while collecting data for a chronic condition like heart disease or cancer?

4. Divide total reports of vaccine-attributed deaths reported in 2021 by the average number of deaths reported from 2015-2019. Show work:

5. What is responsible for the sudden increase in reports of vaccine-attributed deaths in 2021?

6. Did reports vaccine-attributed birth defects increase during the same time period?

7. Did reports of vaccine-attributed deaths increase for babies vaccinated during the same time period?

8. Why is the trend different for babies vaccinated during this time period?

Assignment Checklist:
5. Did you complete all 5 graphs?
6. Are the graphs presented in a text file (like word, pages, or pdf)?
7. Did you answer all the questions?