

LESSON

Making Inferences from the Statistics of the Segregation Era in Arkansas

Historians and others who have studied the era of segregation in Arkansas history (when the black and white races were separated by law, about 1890-1965) have used statistical data to conduct much of their research. Statistical data are collected from a wide variety of sources, such as the United States Census—which has been compiled at the beginning of each decade since 1790. The official U.S. Census records a vast amount of information in addition to the names of every American—such as race, occupation, amount of education, etc. Other sources of statistics are local city and county governments, which generate records such as marriage data, birth records, and tax records.

This lesson is intended to introduce students to research and statistics, the processes of collecting and analyzing data as well as drawing inferences from them. The lesson plan is divided into two parts, **Phase 1**, “Guided Activities,” and **Phase 2**, “Independent Practice.” The first and second activities in Phase 1 involve collecting and analyzing class demographics data as well as drawing inferences from them, while the third activity lets students learn to express research findings both in writing and in graphs. In Phase 2 students work on three different sets of data—they independently display their learned skills of analyzing data, drawing inferences from them and expressing research findings both in writing and in graphs.

Please note:

The lesson plan is suggestive of a beginning point for teachers. Teachers are advised to modify to meet their specific classroom needs.

LESSON PLAN

Lesson: Making Inferences from the Statistics of the Segregation Era in Arkansas

Recommended grade levels: 6

Time required: 5 class periods of 50 minutes duration

Prerequisite Knowledge:

Students should have working knowledge of the following skills:

Measures of central tendency: Mean, median, and mode

Measure of variation: Range

Constructing a line graph

Curriculum fit: Mathematics

Mathematics Curriculum Frameworks: DAP.15.6.2; 16.6.1

Objectives:

Students will be able to:

- observe data and make justifiable inferences from them
- determine measures of central tendency (mean, median, and mode)
- determine measures of variability (range)
- construct line graphs.

Procedures:

Phase 1: Guided Practice: Observing data and making inferences from familiar setting

1) Divide students into 4-5 groups. Instruct the groups to choose two persons to be “fact-finders.”

2) Activity 1: Ask the “fact-finders” to collect data about the demographics of the class, using Work Sheet 1 and report their findings to their respective groups. Instruct and assist the groups to fill out Work Sheet 1. Facilitate discussion of the results before the entire class.

- 3) Activity 2: Instruct the groups to choose two different persons to be “fact-finders” for the second activity. Ask the “fact-finders” to collect data about languages the class knows to speak, using Work Sheet 2 and report their findings to their respective groups. Instruct and assist the groups to fill out Work Sheet 2. Facilitate discussion of the results before the entire class.
- 4) Activity 3: Instruct and assist the groups to fill out Work Sheet 3. Facilitate discussion of the results before the entire class.

Phase 2: Independent Practice and Performance Assessment

Distribute Work Sheet 4 to students. Instruct them to work alone. Assess student-performance and provide feedback.

Work Sheet 1

- 1) There are _____ (number of) students in my class.
- 2) There are _____ (number of) boys and _____ (number of) girls in the class. (Do not include your teacher.)
- 3) In my class there are _____ (number of) white students, _____ (number of) African American students, _____ (number of) Latino students, _____ (number of) American Indian students, _____ (number of) Asian students, and _____ (number of) students from all other races.
- 4) The race that is represented most in my class is _____.
- 5) The race that is represented least in my class is _____.

Work Sheet 2

Please fill out the following tables:

Table 1

Category #	Number of languages spoken by students	Number of students
1	1	
2	2	
3	3	
4	4	
5	5	
6	More than 5	

Table 2

2a	The category # with the most number of students is:	
2b	The number of students in the category # referred in Question 2a:	
2c	The category # with the least number of students is:	
2d	The number of students in the category # referred in Question 2c:	
2e	The range between 2b and 2d is:	

Work Sheet 3

1) Use the data from Work Sheet 1 to write 5-10 sentences explaining your findings.

2) Use the data from Work Sheet 2 to write 5-10 sentences explaining your findings.

3) Construct a line graph for the number of languages spoken by the students and the number of students corresponding to the number of languages spoken.

Work Sheet 4

Problem 1:

The average monthly salaries (dollars) of white and African American public school teachers in some Southern states for 1909-1910 and 1928-1929 are provided in the following table.

(The table is taken from the 1967 book of Henry Allen Bullock, A History of Negro Education in the South: From 1619 to the Present. The table has been modified for purposes of student-user-friendliness).

Years	1909-1910			1928-1929		
Races/ States	White	African American	Difference in Salaries	White	African American	Difference in Salaries
Alabama	53.76	24.47		117.18	54.46	
Arkansas	40.52	30.36		96.40	69.08	
Florida	61.97	31.98		130.12	66.25	
Georgia	83.37	36.29		97.22	38.24	
Louisiana	63.05	31.46		133.22	88.57	
Mississippi	69.92	30.21		129.71	53.85	
North Carolina	37.02	25.26		116.00	70.59	
South Carolina	79.77	35.62		126.14	40.51	
Tennessee	48.12	26.96		112.50	71.92	
Texas	62.07	46.34		121.03	91.60	
Virginia	47.18	29.37		111.36	69.72	
<i>Average</i>	60.60	32.67		118.01	72.78	

Use the data provided in the above table to answer the following questions:

1a) Which state paid the highest salary for white teachers in 1909-1910 and what was the amount?

1b) Which state paid the lowest salary for white teachers in 1909-1910 and what was the amount?

1c) What was the salary range for white teachers in 1909-1910?

1d) Which state paid the highest salary for African American teachers in 1909-1910 and what was the amount?

1e) Which state paid the lowest salary for African American teachers in 1909-1910 and what was the amount?

1f) What was the salary range for African American teachers in 1909-1910?

1g) In the column "Difference in Salaries," please input your answers for 1909-1910.

2a) Which state paid the highest salary for white teachers in 1928-1929 and what was the amount?

2b) Which state paid the lowest salary for white teachers in 1928-1929 and what was the amount?

2c) What was the salary range for white teachers in 1928-1929?

2d) Which state paid the highest salary for African American teachers in 1928-1929 and what was the amount?

2e) Which state paid the lowest salary for African American teachers in 1928-1929 and what was the amount?

2f) What was the salary range for African American teachers in 1928-1929?

2g) In the column "Difference in Salaries," please input your answers for 1928-1929.

Problem 2:

The 1900 and 1940 U.S. Census reported the following data relative to education in Arkansas:

Year	Race/ Factors	White	Black
1900	School Population	370,553	146,880
	Annual Cost Per Pupil	\$5.14	\$2.13
	Building Values	\$3,019,763	\$335,527
1940	School Population	356,998	115,016
	Annual Cost Per Pupil	\$18.56	\$8.46
	Building Values	\$39,790.620	\$3,566.072

(Adapted from Moseley, M.A. Thesis, p.11-12)

- (1) Construct line graphs each for the years 1900 and 1940, respectively, for *Race* and *School Population*.
- (2) Construct line graphs each for the years 1900 and 1940, respectively, for *Race* and *Annual Cost Per Pupil*.

Problem 3:

(The table is taken from the 1930 book by Nolen Meaders Irby, A Program for the Equalization of Educational Opportunities in the State of Arkansas, published by George Peabody College of Teachers, Nashville, Tennessee.)

Table showing Arkansas Counties Maintaining Schools for Whites and Negroes ranked according to Expenditures per Average Daily Attendance (A. D. A.)

County	Rank in White Expenditure Per A. D. A.	Rank in Negro Expenditure Per A. D. A.	Ratio of White to Negro Expenditure Per A. D. A.
Lee	1	21	\$67.67 to \$15.10
Crittenden	2	37	65.09 to 11.95
Union	3	7	62.75 to 23.60
Polaski	4	3	61.41 to 32.03
St. Francis	5	42	59.09 to 10.43
Phillips	6	18	59.01 to 15.82
Desha	7	51	54.30 to 8.25
Chicot	8	54	54.11 to 6.35

TABLE XVIII—(Continued)

County	Rank in White Expenditure Per A. D. A.	Rank in Negro Expenditure Per A. D. A.	Ratio of White to Negro Expenditure Per A. D. A.
Drew	9	19	\$52.79 to \$15.64
Mississippi	10	10	51.71 to 20.68
Monroe	11	34	48.72 to 12.43
Jefferson	12	17	48.38 to 16.15
Ashley	13	31	48.30 to 13.15
Jackson	14	5	47.49 to 24.87
Sebastian	15	1	46.85 to 38.90
Arkansas	16	45	45.46 to 9.88
Lafayette	17	25	44.78 to 14.61
Woodruff	18	38	44.73 to 11.38
Miller	19	14	44.52 to 17.53
Hempstead	20	23	42.75 to 14.83
Little River	21	32	41.65 to 12.87
Columbia	22	39	41.28 to 11.38
Cross	23	50	39.71 to 8.89
Calhoun	24	40	37.69 to 10.92
Clark	25	24	36.64 to 14.62
Poinsett	26	20	36.04 to 15.46
Lincoln	27	46	35.63 to 9.84
Sevier	28	35	35.31 to 12.23
Garland	29	8	34.33 to 21.75
Prairie	30	22	33.55 to 14.85
Lonoke	31	12	32.50 to 19.05
Osachita	32	11	32.38 to 19.12
Cleveland	33	33	21.23 to 12.55
Saline	34	4	31.22 to 31.27
Craighead	35	10	31.17 to 20.49
Crawford	36	15	30.84 to 16.89
Dallas	37	26	30.64 to 14.48
Benton	38	6	30.63 to 24.00
Grant	39	30	30.30 to 13.33
Washington	40	2	29.95 to 33.18
Franklin	41	44	29.00 to 10.21
Lawrence	42	55	27.72 to 5.63
Conway	43	27	27.04 to 14.08
Pike	44	47	26.83 to 9.75
Perry	45	58	26.74 to 3.72
Bradley	46	49	26.33 to 9.22
Howard	47	41	26.30 to 10.90
White	48	28	26.12 to 14.00
Madison	49	29	24.81 to 13.34
Pope	50	16	24.62 to 16.35
Logan	51	52	24.51 to 7.69
Johnson	52	36	24.39 to 12.00
Independence	53	57	23.63 to 4.04
Yell	54	59	22.42 to 2.94
Nevada	55	48	22.17 to 9.54
Faulkner	56	43	21.96 to 10.26
Hot Springs	57	56	21.70 to 4.46
Izard	58	53	17.04 to 6.52
Van Buren	59	13	10.42 to 17.65
Average Per County			\$36.90 \$14.46
Range			\$10.42 to \$14.46 to \$67.67 \$38.90

