FAPP 9e Writing Projects – Chapter 14

1. Does the Hill–Huntington method best reflect the intentions of the Founding Fathers, as these intentions were set down in the Constitution and in the debate during the 1787 Constitutional Convention? Good sources of information here include all the publications listed in the "Suggested Readings" section. This writing project requires that you state your answer to the question and make a case for it.

2. In the apportionment resulting from the 2010 Census, two states, New York and Ohio, lost 2 house seats, and eight other states lost 1 seat. The 12 seats were transferred to states that had experienced dramatic increases in population: Texas got 4 additional seats, Florida received 2 more, and 6 other states got one apiece. If Congress should decide to increase the statutory house size so that no state's delegation in the House would be reduced, how many seats would have been added to the House, and which states would have gotten them? (*Warning:* it's more than 12.) The populations and apportionments for the 50 state are available on the Census Bureau Web site (www.census.gov/population/www/censusdata/apportionment.html).

3. In 2004, the state of Colorado considered an amendment to its constitution regarding the way that electors representing Colorado in the Electoral College would be selected. Although this amendment was not adopted, it provides an interesting apportionment problem. Colorado's electors are selected by the presidential ticket that received a plurality of the votes. The proposed amendment, which would have taken effect in 2004, apportioned Colorado's 9 electoral votes to each ticket in proportion to the number of popular votes received. The apportionment method specified in the amendment was as follows: Determine each ticket's quota, and round to the nearest whole number. Tickets with quotas less than 0.5 receive no electors. If the number of electors thus apportioned is less than Colorado is entitled to have, give the remaining electors to the ticket that received the most votes. If the number of electors is more than Colorado is entitled to have, take electors from that ticket that, among all who received electors, received the smallest number of popular votes. If more electors need to be removed, take from the ticket that received the next smallest number of popular votes, and so on.

Write an essay exploring the implications of this apportionment method, and compare it to others that Colorado could have chosen. Include a discussion of the consequences that would occur if a third-party candidate received some electoral votes as a result of this procedure.

4. **The Dean method**. The Webster method was proposed in 1832 after New York received an apportionment in excess of its upper quota. Two other apportionment methods were proposed in the same year: the method of John Quincy Adams, which is biased in favor of small states as much as the Jefferson method is biased in favor of large states, and the Dean method. The latter method, invented by James Dean, a professor of mathematics and astronomy at Dartmouth College, gives the equitable apportionment from the point of view of absolute difference in district population. Suppose that state *A* has population *p* and its tentative apportionment is *n*, while state *B* has population *q* and tentative apportionment *m*. If another seat is to be given to one of these states, answer the following questions:

**(a)** Calculate the absolute difference in district populations if *A* gets the seat, and repeat the calculation for the situation when *B* gets the seat.

**(b)** Show that the difference between the two results in part (a) is equal to p/n# – q/m#, where *n*# denotes the *harmonic mean* (you may have to Google this term) between *n* and *n* + 1.

**(c)** Explain the mechanics of the Dean method, including why it is a divisor method that rounds a number *r* down to *r* if *r* is less that the Dean rounding point, and up to *r* otherwise. It's up to you to figure out the Dean rounding point.

**(d)** Is the Dean method biased in favor of large states or small states? Is it possible for any state to get an apportionment of zero? Compute the apportionment of the House of Representatives according to the 2010 census by the Dean method. Is the quota condition satisfied? For the source of population data, see the Census Bureau Web site (www.census.gov/population/www/censusdata/apportionment.html).