1.      The Safety Director of Honda USA took samples at random from the file of minor accidents and classified them according to the time the accident took place. The sample data is as follows:

8am to 9am 6 accidents

9am to 10 am 6 accidents

10am to 11 am 20 accidents

11am to noon 8 accidents

Noon to 1pm 7 accidents

1pm to 2pm 8 accidents

2pm to 3pm 10 accidents

3pm to 4pm 6 accidents

At the 0.01 level of significance, are the accidents evenly distributed throughout the day?

2.      For many years TV executives used the guideline that 30 percent of the audience were watching each of the prime-time networks and 10 percent were watching cable stations on a weekday night. A random sample of 500 viewers in the Tampa-St. Petersburg area last Monday night showed that 165 homes were tuned in to the ABC affiliate, 140 to the CBS affiliate, 125 to the NBC affiliate, and the remainder were viewing a cable station. At the 0.05 level of significance, can we conclude that the old guideline is still reasonable?

**15.18** Sixty-four students in an introductory college economics class were asked how many credits they

had earned in college, and how certain they were about their choice of major. *Research question:*

At *α* = *.*01, is the degree of certainty independent of credits earned?

*Credits Earned Very Uncertain Somewhat Certain Very Certain Row Total*

*0–9* 12 8 3 23

*10–59* 8 4 10 22

*60 or more* 1 7 11 19

*Col Total* 21 19 24 64

**15.22** A student team examined parked cars in four different suburban shopping malls. One hundred vehicles

were examined in each location. *Research question:* At *α* = *.*05, does vehicle type vary by

mall location? (Data are from a project by MBA students Steve Bennett, Alicia Morais, Steve

Olson, and Greg Corda.)

*Vehicle Type Somerset Oakland Great Lakes Jamestown Row Total*

*Car* 44 49 36 64 193

*Minivan* 21 15 18 13 67

*Full-sized Van* 2 3 3 2 10

*SUV* 19 27 26 12 84

*Truck* 14 6 17 9 46

*Col Total* 100 100 100 100 400

**15.24** High levels of cockpit noise in an aircraft can damage the hearing of pilots who are exposed to this

hazard for many hours. A Boeing 727 co-pilot collected 61 noise observations using a handheld

sound meter. Noise level is defined as “Low” (under 88 decibels), “Medium” (88 to 91 decibels),

or “High” (92 decibels or more). There are three flight phases (Climb, Cruise, Descent). *Research*

*question:* At *α* = *.*05, is the cockpit noise level independent of flight phase? (Data are from

Capt. Robert E. Hartl, retired.)

*Noise Level Climb Cruise Descent Row Total*

*Low* 6 2 6 14

*Medium* 18 3 8 29

*High* 1 3 14 18

*Col Total* 25 8 28 61

**15.28** Can people really identify their favorite brand of cola? Volunteers tasted Coca-Cola Classic,

Pepsi, Diet Coke, and Diet Pepsi, with the results shown below. *Research question:* At *α* = *.*05, is

the correctness of the prediction different for the two types of cola drinkers? Could *you* identify

your favorite brand in this kind of test? Since it is a 2 × 2 table, try also a two-tailed two-sample

*z* test for *π*1 = *π*2 (see Chapter 10) and verify that *z*2 is the same as your chi-square statistic.Which

test do you prefer? Why?

*Correct? Regular Cola Diet Cola Row Total*

*Yes, got it right* 7 7 14

*No, got it wrong* 12 20 32

*Col Total* 19 27 46