CASE **28**

HOUSING PRICES—II

You currently own a home in Eastville, Oregon, and want to put your house on the market. You're not in any particular hurry to get rid of the house, and would like to try selling it yourself. One way to determine a reasonable asking price of a house is to call one or more real estate agents and seek their advice. Another is to hire an appraiser—this approach would cost several hundred dollars. You've been wondering if there might be an easier and cheaper way to understand what determines selling prices in the area.

On your daily after-dinner stroll through the neighborhood, you've passed several houses on the market. At first, you hoped that you could get a feel for the market by simply studying these few houses. But the more you think about this problem, the more confused you get. You're pretty sure that bigger homes sell for more, but you don't know how *much* more. Also, it seems as if fireplaces would be a desirable amenity in Oregon; your house doesn't have a fireplace, and you're not sure how much to lower the asking price because of this. You've also heard that location is the most important thing in the real estate market, and you wonder if prices tend to vary by school district, one indication of the quality of the neighborhood.

A friend has collected some information for you about selling prices and other characteristics of houses sold within the last few months in your neighborhood. These include square feet, number of bedrooms and bathrooms, type of heating, and school district. This data set is shown below. At first, you decided that your problem was solved—you would only need to find a house just like yours in the data set, and use its price as your guess.

Of course, it's never that easy. Although you know the specific characteristics of your house, such as square feet, number of bedrooms and bathrooms, and so forth, *not*

These data were used by Ellen L. Chilikas, David S. Abelson, and Brian R. Landry to price a house owned by one of the group members as part of a student project. The name of the suburb from which the data were taken has been changed.

one of the houses in the data set is a perfect match for your own home. Some of the houses in the data set come *close* to yours, but every comparable house is different from yours in at least three aspects. You're wondering if there might not be another way to use the data to come up with an estimate.

The data are contained in the file named HOUSES, which includes information on 108 houses. In this data set, SQ_FT is the variable measuring the total square feet in the house. BEDS and BATHS are number of bedrooms and bathrooms, respectively. HEAT and STYLE are categorical variables. HEAT takes on the value of 0 for gas forced air heating and 1 for electric heat. STYLE is the architectural style of the home: 0 indicates a trilevel, 1 indicates a two-story house, and 2 indicates that the house is a ranch-styled home. GARAGE is the number of cars that might fit in the garage, although you don't know whether the garage is attached. AGE is the age of the house in years. FIRE indicates the presence (FIRE = 1) or absence (FIRE = 0) of a fireplace and BASEMENT indicates the presence (BASEMENT = 1) or absence (BASEMENT = 0) of a basement. PRICE is the selling price of the house in thousands of dollars and SCHOOL is the school district (0 = Eastville school district; 1 = Apple Valley school district). All else the same, Apple Valley is viewed as being the more desirable of the two school districts.

Use these data to uncover the important determinants of selling prices of houses in your neighborhood. Then prepare a description of how your findings might be used as a general method for estimating the selling price of *any* house in your neighborhood, such as yours.

DATA SET

SQ_FT	BEDS	BATHS	HEAT	STYLE	GARAGE	BASEMENT	AGE	FIRE	PRICE	SCHOOL
1238	3	2	0	0	1	1	12	1	59.900	1
1707	3	2	1	0	2	0	13	1	64.000	0
1296	4	2	0	0	2	1	17	0	66.500	0
1320	3	2	0	0	2	1	11	1	66.500	0
1210	3	2	0	0	1	0	6	1	66.900	0
1296	3	2	0	0	2	1	17	1	68.000	0
1765	3	2	0	0	2	1	20	0	68.500	0
1725	4	3	0	0	2	1	12	0	69.000	0
1794	4	2	0	0	2	1	18	0	70.950	0
1294	3	2	0	0	2	0	13	1	71.000	0
1372	3	2	0	0	2	1	9	0	72.692	1
1162	3	2	0	0	1	0	8	1	72.801	0
1996	4	2	0	0	2	0	13	1	75.207	1
1764	4	2	1	0	2	1	13	1	76.000	0
1416	3	2	0	0	2	0	8	0	76.000	1
1730	4	2	0	0	2	0	15	1	77.500	0
1392	3	2	0	0	2	1	8	1	79.900	1
1664	3	3	0	0	2	0	11	1	79.900	0
1332	3	2	0	0	2	1	14	0	81.000	1
1752	3	3	0	0	2	0	18	1	82.800	0
2167	3	3	1	0	2	1	13	1	84.900	0
1664	3	2	0	0	2	0	9	1	85.000	0

(continues on the next page)

SQ_FT	BEDS	BATHS	HEAT	STYLE	GARAGE	BASEMENT	AGE	FIRE	PRICE	SCHOOL
1973	4	3	0	0	2	0	13	1	86.000	0
1384	3	2	0	0	2	0	5	1	89.280	0
1431	3	2	0	0	2	1	7	1	89.900	1
1950	5	3	0	0	2	0	13	1	90.000	0
1452	3	2	0	0	2	1	4	1	92.000	0
1829	3	2	0	0	2	0	10	1	92.439	1
1652	4	3	0	0	2	1	7	1	94.646	1
1516	3	2	0	0	2	1	10	1	97.293	1
1998	4	3	0	0	2	1	17	1	98.100	1
1984	4	3	0	0	2	1	9	1	98.149	0
1840	3	3	0	0	2	1	9	1	105.000	0
1823	4	3	0	0	2	1	3	1	110.000	1
2150	5	3	0	0	2	1	12	1	111.900	0
2096	3	3	0	0	2	1	9	1	113.000	1
2212	4	3	0	0	3	1	17	1	124.000	1
2375	4	3	0	0	2	1	11	1	133.000	1
2809	4	3	0	0	3	1	6	1	195.000	0
912	4	2	0	1	2	1	19	1	59.000	0
816	3	2	0	1	2	1	19	0	61.500	0
1008	5	2	0	1	2	1	17	0	63.500	0
912	4	2	0	1	2	1	16	1	66.950	1
1008	5	2	0	1	2	1	17	1	68.000	0
838	4	2	0	1	1	1	11	0	68.694	1
1008	4	3	0	1	2	1	19	1	69.000	0
1120	3	2	0	1	2	1	11	1	70.452	1
1242	4	3	0	1	2	1	12	0	75.000	0
912	4	2	0	1	2	1	18	1	76.900	1
1316	3	2	0	1	2	1	8	1	83.000	0
1490	3	2	0	1	2	1	13	1	88.000	0
1118	4	3	0	1	2	1	16	1	88.879	1
1278	3	2	0	1	2	1	11	1	89.347	0
1490	3	2	0	1	2	1	10	1	89.700	1
1418	4	2	0	1	2	1	14	1	90.000	1
1250	4	3	0	1	2	1	17	1	90.800	1
1881	4	3	0	1	2	1	9	1	91.500	1
1355	3	2	0	1	2	1	7	1	95.000	1
1518	3	2	0	1	2	1	22	0	98.000	1
1606	4	3	0	1	2	1	13	1	99.500	0
2124	3	2	0	1	2	1	14	1	107.000	0
2099	4	3	0	1	2	1	13	1	113.750	1
2232	5	3	0	1	2	1	9	1	125.000	1
1608	5	3	0	1	3	1	13	1	132.000	1
1320	3	2	0	2	2	1	13	1	76.000	1
1680	3	3	0	2	2	0	7	1	79.900	1
1434	3	3	0	2	2	1	12	1	79.900	1
1664	3	2	0	2	2	1	7	1	85.000	1
1379	3	2	0	2	2	1	8	1	87.158	1

(concludes on the next page)

II–12 CASE 28 HOUSING PRICES—II

SQ_FT	BEDS	BATHS	HEAT	STYLE	GARAGE	BASEMENT	AGE	FIRE	PRICE	SCHOOL
1634	3	3	0	2	2	1	10	1	87.200	1
1400	3	3	0	2	2	0	1	1	91.500	1
1664	4	4	0	2	2	1	16	1	91.500	1
1548	3	3	0	2	2	1	8	1	92.500	1
2040	4	3	0	2	2	1	15	1	93.500	0
1792	4	3	0	2	2	1	9	1	94.000	1
1865	3	3	0	2	2	1	12	1	96.700	0
1833	3	3	0	2	2	1	7	1	97.400	1
1627	3	3	0	2	2	1	3	1	98.500	1
2198	4	3	0	2	2	1	12	1	99.000	0
1707	3	3	0	2	2	1	12	1	99.000	0
2096	3	3	0	2	2	1	7	1	102.400	1
2004	4	3	0	2	2	1	13	1	104.000	0
1818	4	3	0	2	2	1	19	1	107.000	1
1935	3	3	0	2	2	1	11	1	107.900	1
2381	3	3	0	2	2	0	17	1	109.000	1
1977	3	3	0	2	2	1	9	1	110.000	1
2317	5	3	0	2	2	1	9	1	110.500	1
2072	4	3	0	2	2	1	11	1	112.000	1
2108	3	3	0	2	2	1	7	1	112.900	0
2060	4	4	0	2	2	1	9	1	113.600	1
2064	3	3	0	2	2	1	5	1	114.500	1
2148	5	4	0	2	2	1	8	1	114.700	1
2170	6	4	0	2	2	1	21	1	115.000	1
1984	4	3	1	2	2	1	11	1	121.000	1
2130	4	3	0	2	2	1	20	1	121.000	1
2049	4	3	0	2	2	1	19	1	125.000	1
2035	3	3	0	2	3	1	6	1	128.000	1
2264	3	3	0	2	3	1	7	1	130.000	1
2264	3	3	0	2	3	1	10	1	131.000	1
2362	4	3	0	2	2	1	6	1	132.000	0
2262	5	3	0	2	2	1	12	1	132.500	1
2353	4	3	0	2	2	1	5	1	132.500	0
2298	3	3	0	2	3	1	2	1	144.500	1
2282	4	3	0	2	2	1	9	1	150.577	1
2542	4	3	0	2	2	1	6	1	153.800	1
2380	4	3	0	2	2	1	6	1	155.000	1
2505	4	3	0	2	2	1	7	1	156.900	1
2804	4	3	0	2	3	1	1	1	192.000	1