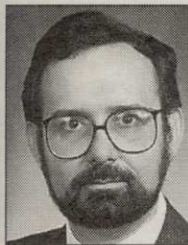


Study identifies 'over'- and 'under'-supplied areas in the United States

By ANDREW OVERBECK

MADISON, Wis. — Several Michigan cities have too many golf courses while Anchorage, Alaska, leads a group of smaller cities in need of more golf facilities, according to Stephen Malpezzi, a real-estate professor at the University of Wisconsin, who has created a statistical model that predicts the overall market for golf course development in 290 metropolitan statistical areas in the United States.



Stephen Malpezzi

The model, explained in his paper, "The Market for Golf," identifies the most "over golfed" (too many courses) and "under golfed" metropolitan areas in the country.

According to Malpezzi's findings, the top 10 oversupplied cities are Ann Arbor, Mich.; Sarasota, Fla.; Kalamazoo, Mich.; Fayetteville, Ark.; Jackson, Mich.; New Bedford, Mass.; Fort Pierce, Fla.; Biloxi, Miss.; Grand Rapids, Mich.; and Grand Fork, N.D.

The top 10 undersupplied cities are Anchorage Alaska; Sherman, Texas; Wausau, Wis.; Waterbury, Conn.; Williamsport; Pa.; Decatur, Ill.; Medford, Ore.; Fort Lauderdale, Fla.; Texarkana, Texas; and Miami, Fla.

Malpezzi is quick to caution that the model should be accompanied by further research. "The model itself doesn't tell you everything that you need to know, but if you do some research you will find that there are some consistent stories to be told about what's

Continued on page 12

Top 10 under-supplied cities

METRO AREA	STATE	MODEL'S PREDICTION HOLES PER 1,000 POP. IN 1993 (A)	ACTUAL HOLES PER 1,000 POP. IN 1993 (B)	SHORTAGE OF HOLES PER 1,000 POP. IN 1993 (A-B)
Anchorage	AK	.8417	.1591	1.0008
Sherman	TX	.8362	.3789	1.2151
Wausau	WI	.6292	.5459	1.1751
Waterbury	CT	.6168	.5279	1.1447
Williamsport	PA	.6023	.4549	1.0572
Decatur	IL	.5880	.6143	1.2023
Medford	OR	.5795	.3689	.9484
Ft Lauderdale	FL	.5658	.7169	1.2827
Texarkana	TX	.5365	.4495	.9860
Miami	FL	.5212	.3392	.8604

Top 10 over-supplied cities

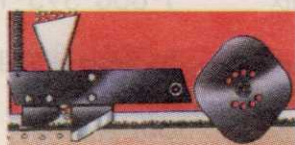
METRO AREA	STATE	ACTUAL HOLES PER 1,000 POP. IN 1993 (A)	MODEL'S PREDICTION HOLES PER 1,000 POP. IN 1993 (B)	OVERSUPPLY OF HOLES PER 1,000 POP. IN 1993 (A-B)
Ann Arbor	MI	1.7099	2.4811	.7712
Sarasota	FL	1.6594	3.6936	2.0342
Kalamazoo	MI	1.5707	2.4976	.9269
Fayetteville	AR	1.3681	2.1427	.7746
Jackson	MI	1.1318	2.1034	.9716
New Bedford	MA	1.1053	2.1009	.9956
Fort Pierce	FL	.9522	2.5451	1.5929
Biloxi	MS	.9060	1.6436	.7376
Grand Rapids	MI	.9048	1.7780	.8732
Grand Fork	ND	.8465	1.7826	.9361



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Golf study

Continued from page 3

been happening in these areas," he said.

The model suggests which markets need more golf by predicting the number of holes per capita that would be required given the area's demographic make-up, climate and size. Malpezzi compared the model's prediction to the actual number of holes per 1,000 population in each metropolitan area. The areas that have fewer holes than the model predicts are considered "under-supplied" and worthy of investigation for future development. The areas that have more golf than the model predicts are considered "over-supplied" (see Top 10 "over" and "under" supplied cities chart).

However, since the model used 1993 National Golf Foundation (NGF) statistics on the number of holes of golf in each metropolitan area, the door is open, as Malpezzi recommends, for further research.

Armed with 1997 statistics from the NGF on the numbers of golf holes in the top 10 "over" and "under" supplied areas, *Golf Course News* created an updated table that measures the relative success of Malpezzi's model by charting the growth of golf in each metropolitan area and comparing it with what his model predicted (See Growth in Development in "Under" and "Over" Supplied Cities). While this comparison fails to update the other statistics in the model (given population shifts Waterbury, Conn. and New Bedford, Mass., had to be thrown out), it does offer some interesting perspectives on its usefulness.

All the under supplied areas experienced growth in the number of golf holes built between 1993 and 1997 and some actually came close to achieving the amount of golf holes predicted by Malpezzi's model. Medford, Ore. tops the list, coming within four holes of the model; Sherman, Texas came within seven holes; and Decatur, Ill. and Wausau, Wis. came within 15 and 19 holes, respectively.

The Medford area not only came closest to matching the model, it also experienced a development boom, growing from 54 holes in 1993 to 135 holes in 1997. According to Jim Cochran, general manager at Stoneridge Golf Club, which opened in 1995, the Medford area has become quite competitive and might be reaching its saturation point.

"I would say we have at least one 18-hole course more than we should," said Cochran. "Anyone else thinking about coming in and putting another course in here will certainly struggle in the long term."

Dan Coughlin, general man-

Continued on next page

Growth in golf development in under-supplied cities

METRO AREA	STATE	ACTUAL HOLES	ACTUAL HOLES	MODEL'S IDEAL NO.	SHORTAGE OF
		1993 (A)	1997 (B)	OF HOLES (C)	HOLES (C-B)
Anchorage	AK	36	72	191	119
Sherman	TX	36	72	79	7
Wausau	WI	63	117	136	19
Williamsport	PA	54	72	125	53
Decatur	IL	72	126	141	15
Medford	OR	54	135	139	4
Fort Lauderdale	FL	900	1,251	1,610	359
Texarkana	TX	54	72	118	46
Miami	FL	657	684	1,667	983

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Growth in golf development in over-supplied cities

METRO AREA	STATE	ACTUAL HOLES		MODEL'S IDEAL NO.	SURPLUS OF HOLES (B-C)
		1993 (A)	1997 (B)	OF HOLES (C)	
Ann Arbor	MI	702	981	218	763
Sarasota	FL	1,026	1,332	565	767
Kalamazoo	MI	558	693	207	486
Fayetteville	AR	243	333	88	245
Jackson	MI	315	360	145	215
Fort Pierce	FL	639	981	400	581
Biloxi	MS	324	360	145	215
Grand Rapids	MI	1,224	1,566	601	965
Grand Fork	ND	126	162	66	96

Golf study

Continued from previous page

ager at Stuart Meadows Golf Course, which opened in 1994, agrees. "For our population, we have quite a bit of golf courses in town."

While Malpezzi's model seems to have touched on a valuable trend in Medford, one has to dig a little deeper to figure out why the number of golf holes in the so-called "over-supplied" areas continues to grow (see Table 3).

All of the "over-golfed" areas experienced incredible growth between 1993 and 1997 and further distanced themselves from the model's predictions. Ann Arbor, Mich. grew by 279 holes and Fort Pierce, Fla. and Grand Rapids, Mich. each grew by 342 holes. What is happening here?

According to Dave Richards, head of Golf Marketing Services in Bloomfield Hills, Mich., certain sectors of the golf market in Michigan are hurting. "Michigan opened 35 courses last year and, while the new high-end public courses are doing well, the mid-level public courses are getting squeezed out of the market," said Richards.

He predicts in the next couple years, many of the public golf facilities in Michigan will be bought by management companies. "The small courses on their own are not doing as well, they have a hard time competing. Already there are some courses for sale for less than it cost to build them," said Richards.

Jim Scott, president of Gull Lake View Golf Club and former president of the Michigan Golf Course Owners Association, owns five courses in the Grand Rapids/Kalamazoo corridor and has also noticed an increase in competition.

"While Michigan has a very high participation rate, we have introduced a lot more golf courses in the last four years and haven't grown the population of golfers that much," said Scott. All of this has led to greater competition for the same amount of golfers. "By the end of the year, you miss tee times that you normally fill because everyone is competing for golfers," said Scott.

Malpezzi is not surprised the model has identified interesting trends and relates the continued growth in Michigan to a phenomenon he studied in the 1980s in the office space market. "Over building continued for awhile after it was clear that the saturation level had been reached, mostly due to the lag time involved in the development process from planning stages to getting the project started," said Malpezzi. The same thing could be happening in the Michigan golf market.

However, industry experts point out some flaws in Malpezzi's model.

Continued on page 71

April 1999 13

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Variables in Malpezzi's model assist in understanding study

Malpezzi's model for determining the market demand for golf includes the following variables: log population, log median household income, heating and cooling degree days, log median housing value, coastline miles, and percentage of the population over 65 years of age. Most of these variables are standard, but others deserve more explanation.

Heating days are measured by the number of days in a year that the temperature in an area falls below 65 degrees. These are days that require heating. Cooling degree days, therefore, are the number of days in a year that the temperature is above 65 degrees, and require cooling.

This statistic enables the model to directly compare warmer and cooler climates. Although more rounds of golf are played in warm climates, Malpezzi found that during warmer times of the year, it takes more golf courses in colder climates to handle the demand.

Another valuable statistic is median housing value. According to Malpezzi, "this allows the model to assess the opportunity cost of development in certain areas." Indeed, Malpezzi found that in areas with high median housing values, there were fewer golf holes per capita.

Also interesting are the variables

that Malpezzi left out of the model. The impact of tourism spending was found to not only be relatively insignificant, but also limited the number of cities that Malpezzi was able to include in the study. Racial and ethnic populations also had little statistical effect.

Golf study

Continued from page 13

Richards contends there is still room for development in Michigan, depending on the type of course. "High-end public courses will continue to do well. And private clubs up here still have waiting lists, so there is still room for development," said Richards.

According to the National Golf

Foundation's Judy Thompson, including information about golfer participation rates may be helpful to the model. "Figuring that in would certainly explain why a city like Grand Fork, N.D. (which made the top 10 "over supplied" list) has so many holes of golf per 1,000 population," said Thompson.

Malpezzi is planning to add all these variables into the next edition of his "Market for golf"

study. He plans to include types of golf courses, participation rates and development regulations in the next model. Malpezzi will also be updating the model using 1998 data to examine whether markets with higher potential in 1993 actually had higher rates of golf course development.

Malpezzi acknowledges the golf study, which is one of his many hobbies, is a work in progress.

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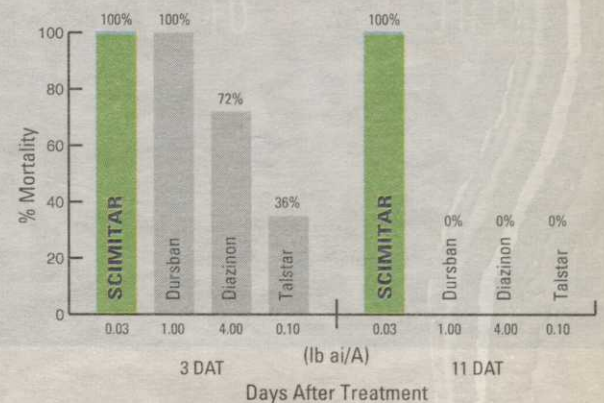
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