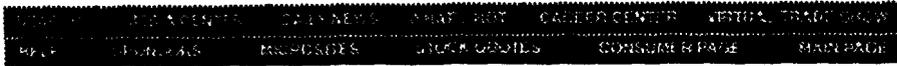




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REFERENCE DESK



Competition in the Wireless Market

--February 1997--

Peter D. Hart Research Associates
1724 Connecticut Avenue, NW
Washington, DC 20009

Between February 7 and 12, 1997, Peter D. Hart Research Associates conducted a survey among 477 cellular telephone users and 523 PCS telephone users. The survey was conducted throughout the country in 10 metropolitan areas in which there is competition among three or more wireless service companies. Fifty interviews were conducted among cellular users in each of the 10 markets using a random-digit dial sample, and 50 interviews were conducted among PCS users in each market using lists of PCS customers. In the random-digit dial sample, 23 respondents (4.6% of cellular users) were identified later as PCS users and were moved to the PCS sample, thus yielding 523 PCS users and 477 cellular users. Overall, the results have a margin of error of $\pm 4.6\%$ for cellular users and $\pm 4.4\%$ for PCS users.

Highlights and Key Findings

1. As the wireless market continues to expand, users of wireless technology are becoming increasingly sophisticated consumers.

The wireless telephone market has expanded to all segments of society, with men and women, young and old, professionals and blue collar workers all represented. This broad market penetration is more of a reflection of the wide use of cellular telephones, which have been in the marketplace for 14 years, than of the more limited use of newer PCS phones. As the following table illustrates, cellular users can be found in every segment of society today. PCS users, who currently make up a much smaller proportion of the wireless market, have a more distinct profile: they are more likely to be male, younger, and more professional than are their cellular counterparts.

Profile of Wireless Users: *Demographics*

	CellularUsers%	PCSUsers%
Sex		
Men	50	66
Women	50	34
Age		
18 to 34	31	36
35 to 49	34	45
50 and over	35	19
Income		
Less than \$30,000	16	14
\$30,000 to \$50,000	27	24
\$50,000 to \$75,000	22	24
More than \$75,000	25	29
Occupation		
Professionals/managers	36	42
White collar	25	28
Blue collar	20	20

Cellular and PCS subscribers use their phones in similar ways—primarily for calls that are personal rather than business-related and local rather than long distance. The only marked difference in their usage patterns, as the following table shows, is that cellular users are considerably more likely than are PCS users to *make* rather than receive calls.

Profile of Wireless Users: *Consumer Patterns*

	CellularUsers%	PCSUsers%
Make vs. Receive Calls		
Make	56	43
Make and receive evenly	35	46
Receive	9	11
Type of Use		
Business	25	30
Personal	58	49
Type of Calls		
Local	70	84
Long distance/mixed	29	15
Monthly Cost		
More than \$50	35	33
\$26 to \$50	36	41
\$25 or less	22	23

“True Switchers”

Half of PCS users say they used a cellular phone before purchasing a PCS phone. Of those, 58% (29% of all PCS users) say they have multiple wireless phones in their household, indicating that the PCS phone simply added to the number of wireless phones they use. The remaining 42% (21% of all PCS users), however, report having used a cellular phone before getting the PCS phone, but do not say that they currently own multiple wireless phones. It is this 21% of PCS users, therefore, that truly switched from a cellular to a PCS phone.

While many Americans are purchasing their first wireless phone, an increasing percentage of users are coming back for a second, third, or even fourth wireless phone for their household. In our March 1996 national survey, 34% of all wireless users said they have more than one wireless phone in their household. Today, however, in these 10 markets, 44% of PCS and 39% of cellular users say there is more than one wireless phone in their household. Indeed, about one in six cellular and PCS users say they have *three or more*. Members of upper-income households, longtime wireless users, and big wireless spenders are the most likely to have more than one wireless phone.

2. “Longtime Users”

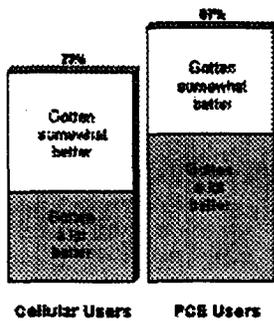
Those who have used a wireless telephone for three or more years are the most likely to think that the technology has changed communication markedly throughout the world (70% improved a great deal among longtime cellular users, 65% improved a great deal among longtime PCS users).

Wireless is an industry on the move, but consumer expectations are on the rise. The bar has been raised for wireless service companies, with users perceiving improvements in wireless technology and expecting further developments. More than four in five cellular and PCS users believe that wireless telephones have revolutionized global communications a great deal or quite a bit, including 64% of cellular users and 62% of PCS users who say these phones have improved it a great deal. These impressive figures are an increase from those measured in last year's national survey, in which 49% of all wireless users said wireless telephones had changed global communications a great deal.

The wireless industry stacks up well against other industries. Seventy-one percent of cellular users and fully four in five (80%) PCS users express positive feelings toward their wireless telephone service company. This places wireless companies at about the same level as local telephone companies (74% positive among cellular users, 72% positive among PCS users), and far ahead of local cable and on-line service companies, neither of which receives more than a

40% positive rating among wireless users.

Overall Impression Of Wireless Phone Service



Both cellular and PCS users give the wireless industry credit for the progress that has been made over the past few years. More than seven in ten cellular users (72%) and even more PCS users (87%) say that wireless phone service has gotten better during this time. Yet, while both types of users believe that wireless service has improved, there is much

greater intensity among PCS users, 51% of whom feel that wireless service has gotten a lot better, compared to 31% of cellular users.

While overall impressions of the industry continue to improve, subscribers' expectations for their service company are increasing. Close to four in ten users want their company to make some changes or would replace their current company, while 61% of both cellular and PCS users say they are generally satisfied with their wireless telephone service company and would like to keep the same company as it is. Yet, last year, fully 70% of all wireless users said they would keep their current company. The most demanding users are members of upper-income households, and high-spending and longtime wireless users.

3. Proportions Who Say They Are Extremely or Very Satisfied with Selected Aspects of Wireless Service

Proportions Who Say They Are Extremely or Very Satisfied with Selected Aspects of Wireless Service

	CellularUsers%	PCSUsers%
Overall satisfaction	67	73
Quality of product	75	81
Reliable/dependable service	72	76
Clear/reliable call transmission	63	72
Resolving customers' problems	61	72
Competitive prices	55	73
Privacy of calls	54	78

The report card is in for the industry, and the marks put both cellular and PCS companies on the honor roll. PCS scores are higher than cellular scores in all six of the categories tested and for overall satisfaction. Because cellular companies have been around longer and have a broader customer base, however, their scores in four of the six categories stack up favorably against those for PCS, which has only been in the market for a short while. PCS does hold decisive advantages when it comes competitive prices and privacy.

4. The growth of PCS technology has created a new group of wireless consumers who are more sophisticated and savvy about wireless technology. While neither cellular nor PCS users believe that they lack an understanding of wireless phones, consumers of the newer PCS technology feel more certain as buyers when shopping for wireless phones. Sixty-one percent of PCS users rate themselves as very or fairly confident and knowledgeable when shopping for wireless technology, compared to 42% of cellular users.

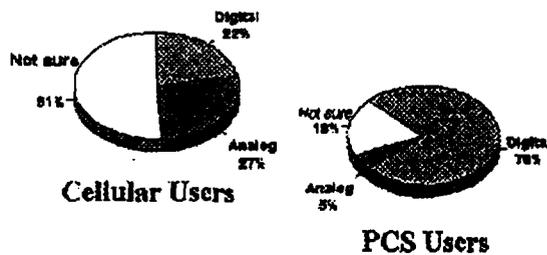
PCS users also know what kind of phone they have, while cellular users are confused by the technological terminology associated with wireless phones today. A 76% majority of PCS users know that their phone is digital. More than seven in ten cellular users, however, wrongly identify or are unable to identify the type of technology on which their phone operates.

Digital V. Analog Technology

5. Focus: Improve Basic Services V. Develop New Services

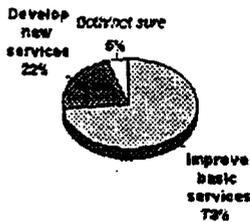
The key to winning customers is to concentrate on the basics, first and foremost. Whether

conservative or daring, cellular or PCS, all wireless users believe that the basics of reliable and dependable service should come first. With an industry that is growing and changing as fast as the wireless industry is, it is easy to forget what counts. More than seven in ten

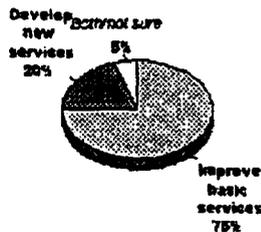


Focus: Improve Basic Services V. Develop New Services

Cellular Users



PCS Users

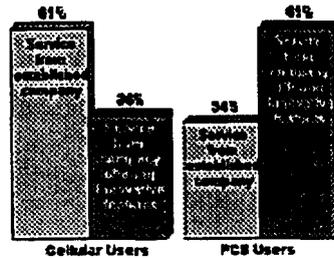


cellular users and PCS users think that wireless telephone companies should focus on improving their basic services by ensuring reliable transmission of calls and having phones that are easy to use. Just one in five favor expanding basic

services by developing new features, such as call forwarding, voice mail, and three-way conference calling. This belief in the importance of the basics spans all demographic groups.

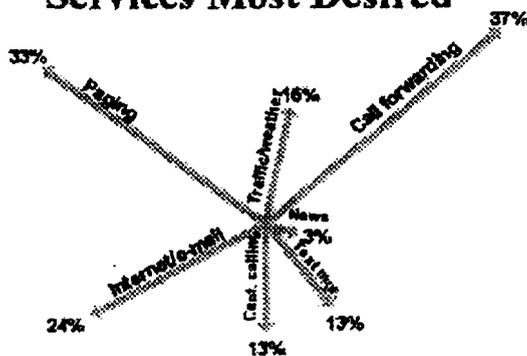
Cellular and PCS users reveal the key attitudinal difference between them when forced to make the above choice. Cellular users are more centrist, risk-averse consumers who prefer to get their wireless service from an established

Main Concern: Established Company V. Innovative Features



company they are familiar with, while PCS users are early adapters who prefer a company that offers a wide range of innovative features.

Services Most Desired



But to win in any changing industry means developing new services once the basics are in order. One thing both cellular and PCS users have in common is that they both want in features and services that make communication easier. The basics of paging,

e-mail, and call forwarding have the greatest appeal.

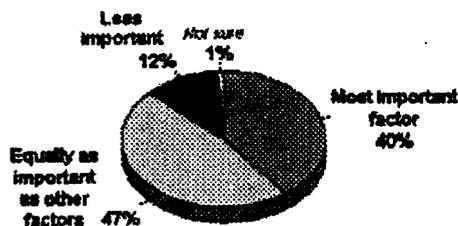
6. Price Factors In Decision On Wireless Phone/Service

The bottom line for this industry is price. Some 40% of both types of users say that cost per minute and monthly charges count the most. Additionally, more than 70% of wireless users say that the cost per minute and monthly charges for their wireless service were extremely important elements to them when making a decision about what wireless service to purchase.

Price Factors In Decision On Wireless Phone/Service

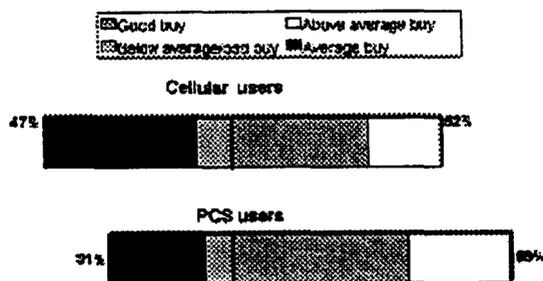
The challenge to any new technology is to bring down prices. The acceptance of an industry often depends on consumers' feelings about the value of its products. The key for the wireless industry is to hold the line on

price. When it comes to their individual wireless bills, half of cellular (51%) and PCS users (52%) expect the price of their service to remain the same over the next year. Additionally, one-fifth of cellular users think their bill will go down, as do almost one-third of PCS users.



Cellular Users

Value Of Wireless Telephone



While cellular and PCS users both give their wireless phones solid marks in terms of providing value for the money, PCS, the new entry, does better. Fully 69% of PCS users and 52% of cellular users feel that their wireless phone is a good or above average buy. Although these ratings are substantial, the industry should note that 47% of cellular users and 31% of PCS users do not consider their wireless phones a good buy. In today's market, wireless companies will have to work hard to meet users' expectations for solid basic services and innovative features—not only to maintain consumers' current level of satisfaction with the value of wireless phones, but to surpass it.

Five Things To Know In Order To Compete In the Wireless Industry In 1997 And Beyond

There is an important back-and-forth going on within the wireless industry between users who prefer the security of an established wireless company and those who are looking for new innovations from a wireless company. Cellular users are more comfortable with an industry that they are familiar with, while PCS users want the latest in new wireless technology.

Price is a real concern. There is a perception among a sizable minority of cellular and PCS users that not only did prices go up last year, but also that there will be another set of price increases in the next 12 months.

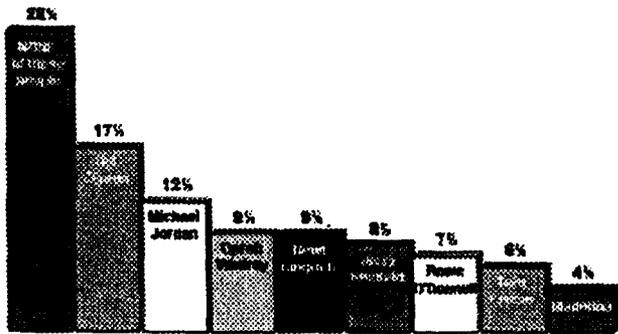
If you think the key to attracting more customers is through bundling, think again. Neither cellular nor PCS users are interested in bundled services; they want flexible and adaptable pricing options, not a long-term contract.

Although wireless users may not know all of the ins and outs of every element of their service, or even whether their phones are digital or analog, they do know what they want from their phones. Both cellular and PCS users feel confident and knowledgeable about shopping for a wireless phone, so treat them with respect as they make their choice.

To make it in today's market and over the long run, wireless companies need to address users' main concerns. They are particularly worried about the poor transmission of calls and about disconnections, but they also are concerned that the receiving party must pay and that some phones cannot be used outside their home area.

7. For now, this is the *cellular* industry. Whether they have a cellular or a PCS phone, more members of the wireless family think of themselves as users of "cellular phones" than anything else. While there are lots of issues on which the two types of users may differ, when it comes to describing their product, they prefer the generic "cellular."

Who Do You Want To Call?



A plurality of wireless users don't think that any of these eight famous Americans are worth the price of a wireless phone call. If they are interested in calling anyone,

however, it's Bill Clinton—probably the only time that the President will outscore Michael Jordan.

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Today is November 15, 1997

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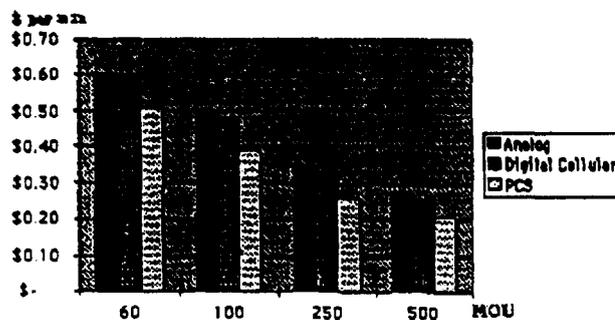
The Yankee Group Media Release

PCS is Driving Down U.S. Wireless Pricing

Boston, Mass., September 29, 1997 — The Yankee Group's analysis of wireless pricing in the 50 largest U.S. cities reveals that the introduction of competition is beginning to have a significant effect. According to a recently published White Paper, "Wireless State of the Union: It's Not an Ice Age, It's a Paradigm Shift," PCS prices are averaging about 20% below analog cellular in the 42 (of the top 50) cities with at least one PCS competitor. The average discount is about the same in the 21 cities that have at two new PCS competitors. "We see a shift from a subscriber acquisition-driven model towards a minutes of use (MOU)-driven model" notes Mark Lowenstein, Vice President of the Yankee Group's Wireless/Mobile Communications practice. "PCS operators are developing price plans to encourage wireless usage among all subscriber segments." The Yankee Group's analysis reveals that the cellular operators are beginning to respond aggressively, in some cases matching PCS pricing. For example, AT&T Wireless and Bell Atlantic Mobile offer digital price plans in many of their markets that are considerably cheaper than their analog rates.

Exhibit 1 Wireless Pricing in the Top 50 U.S. Cities Weighted Price Comparison

Source: the Yankee Group, 1997



Note: BPPM is the bundled price per minute, which factors in monthly access charges, included minutes, and airtime divided by the total number of minutes used.

Overall, the Yankee Group estimates that the "wireless price index", measuring prices across all operators in a market, has, dropped by an average of 25% in markets where at least one new PCS competitor has launched service.

The Yankee Group's analysis also reveals a significant difference in wireless prices across U.S. cities. The most expensive price plans in some cities still weigh in at over \$0.50 per minute for the average user, while in the least expensive cities, the cheapest plans are in the mid \$0.20 per minute range. We also show the cities with the greatest difference between the most and least expensive price plans.

Exhibit 2a Most Expensive Cities for Wireless in the United States

Source: the Yankee Group, 1997

City	Operator	Weighted BPPM
New York	AT&T Wireless	0.73
Los Angeles	L.A. Cellular	0.71
San Francisco	AT&T/AirTouch/GTE	0.64
San Jose	AT&T/AirTouch/GTE	0.56
Houston	AT&T/BellSouth	0.56
San Antonio	AT&T Wireless	0.56
New Orleans	Radiofone	0.56
Miami	AT&T Wireless	0.55
Dallas	AT&T Wireless	0.55
Atlanta	BellSouth	0.54
Cleveland	GTE Mobilenet	0.54

Note that our comparison is for local usage charges only—roaming, long-distance, size of home calling area, special promotions, and other fees, such as handset charge, activation, usage, contracts, and so on are not included in this analysis. The AT&T Wireless pricing plans shown above are generally analog; their digital pricing in most of the above markets is considerably cheaper.

Exhibit 2b Least Expensive Cities for Wireless in the United States

Source: the Yankee Group, 1997

City	Operator	Weighted BPPM
Minneapolis	Sprint PCS	0.32
Pittsburg	Aerial Comm.	0.32
Milwaukee	PCS PrimeCo	0.32
Phoenix	Sprint PCS	0.31
Tampa	PCS PrimeCo	0.31
Sacramento	Pacific Bell Mobile	0.31
Portland	Western Wireless	0.28
Kansas City	Aerial Comm.	0.28
Seattle	GTE Mobilnet	0.28
Denver	Sprint PCS	0.26
Cincinnati	GTE Mobilnet	0.25

Cincinnati GTE Mobilnet 0.25

The pricing analysis also reveals some cities with a large big range between the most and least expensive price plans in that city. "In cities such as New York and Los Angeles, the per-minute price difference between the least and most expensive plans, for the same amount of usage, is as high as \$0.30 per minute," says Crispin Vicars, Senior Analyst. "Other cities, such as San Diego and Washington, D.C. are at virtual price parity."

Exhibit 3 Difference Between Most and Least Expensive Plans in Major Markets

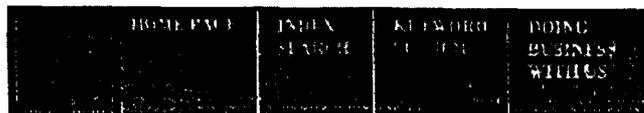
Source: the Yankee Group, 1997

Greatest Differential		Least Differential	
(\$ per minute, difference between highest and lowest rate plans in market for the average user)			
New York	0.30	Indianapolis	0.05
Los Angeles	0.27	Buffalo/Rochester	0.05
Denver	0.25	St. Louis	0.05
Seattle	0.25	San Diego	0.04
Cincinnati	0.23	Washington DC	0.03
Tampa	0.22	Cleveland	0.01

The Yankee Group believes wireless pricing will continue to be volatile for the next 12 to 18 months as competition intensifies, with new PCS and digital cellular launches. There will also continue to be aggressive promotions with prices in the \$0.10 per minute range, such as we have seen from PrimeCo, Sprint PCS, and Aerial Communications. We estimate that the average per minute price, which stood at \$0.45 for the typical user prior to PCS competition, will settle at about \$0.20 per minute by 1999, representing a significant overall reduction in price. As this occurs, wireless becomes part of the overall telephony pie and begins to displace landline traffic. This is necessary for the industry to reach the 50% penetration that most analysts are now forecasting.

**The Yankee Group
Background Information**

The Yankee Group is an independent information technology market research consultancy, which specializes in helping users and vendors link their technology strategy to their business strategy. Established in Boston, Massachusetts in 1970, it has built a solid reputation worldwide for analysis of the key issues in information technology. Yankee Group clients number more than 500, and represent a wide range of businesses and industries. Each year, the Yankee Group sponsors numerous technology-related conferences around the world.



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PCS MARKET RATES: LOCAL PROMOS, NATIONAL IMPACT

National coverage is of utmost importance to the young PCS competitors, but nonetheless our continuing pricing survey of wireless services--where PCS competition has entered the market--highlights just how local the wireless business truly is today.

Even before PCS hit the ground, there were significant regional variations on cellular pricing. Now, with more players and footprints--not to mention very different company histories among the players--the differences even within a market can be striking.

In the 19 markets examined this month, the pricing differences among cellular and PCS ops for equivalent plans run the gamut from 0% to 167%.

For security/low-use subscribers, cost per minute ranges from \$3.42 per MOU for 10 minutes of use in San Francisco (GTE Mobilnet digital cellular) to just 38 cents/min. for 80 MOUs in Tulsa, OK (Western Wireless PCS).

Moderate users (120-220 MOUs/mo.) spend 52 cents/min. in Orange Co. for 250 MOUs/mo., but Sprint PCS entered that market 5/5 with a \$50, 250-MOU plan. That's just 20 cents/MOU, 38% of the cellular price. In other cities, the mid-level usage package runs from 25 cents/MOU to more than 50 cents.

Heavy users in Kansas City are seeing near-landline rates, not from the PCS insurgents but rather from the two cellular incumbents, AT&T and SBC. AT&T is offering 1,500 MOUs for just \$99, about seven cents/min. By comparison, the two local PCS competitors, Aerial and Sprint, charge 21 cents/MOU and 19 cents/MOU, respectively.

At the other end of the spectrum, L.A. Cellular and AirTouch (digital service) are still earning 40 cents/MOU for 600 monthly MOUs. After one mo., Sprint PCS' lowball 15 cents/MOU hasn't impacted on the incumbents' pricing.

Such pricing is competitive in some cities, especially for heavy-use subs. The difference between the avg. cellular and avg. PCS pricing/market is 10% or less for heavy users in Pittsburgh, Indianapolis, Toledo and Birmingham.

More often, however, the differences are notable. In Houston, heavy users save 32% with PCS over cellular; in Sacramento, 60%. Phoenix PCS subs will spend 57% less than heavy cellular users; and in San Francisco, Pacific Bell Mobile Services' pricing for 400 MOUs/mo. is 75% below AT&T's and GTE's.

The rate at which new markets are coming on-air is impressive, too, meaning cellcos still counting on the coverage advantage may have to respond to lower rates sooner rather than later.

PCS COMPETITIVE MARKETS: PRICING STRATEGIES

Market	Operator	-----Low-Use-----		-----Mid-Range-----		-----Heavy Use-----				
		Rev./ Sub	Blended MOU Cost/Min.	Rev./ Sub	Blended MOU Cost/Min.	Rev./ Sub	Blended MOU Cost/Min.			
Birmingham	Powertel	\$20.00	30	\$0.67	\$70.00	200	\$0.35	\$142.90	500	\$0.29
Birmingham	GTE Mobilnet	32.50	30	1.08	75.00	200	0.38	150.00	500	0.30
Birmingham	Bellsouth	27.00	30	0.90	85.35	200	0.43	144.95	500	0.29
	Cellular avg.	29.75		0.99	80.18		0.40	147.48		0.29
	† Difference between cellcos	20%		20%	14%		14%	3%		3%
	† Diff. between avg. cellco/PCS	49%		49%	15%		15%	3%		3%
Columbus	Aerial	24.95	40	0.62	42.95	120	0.36	79.95	300	0.27
Columbus	Ameritech	33.45	40	0.84	59.20	120	0.49	118.00	300	0.39
Columbus	AirTouch	39.20	40	0.98	57.99	120	0.48	103.99	300	0.35
	Cellular avg.	36.33		0.91	58.60		0.49	111.00		0.37
	† Difference between cellcos	17%		17%	2%		2%	13%		13%
	† Diff. between avg. cellco/PCS	46%		46%	36%		36%	39%		39%

Second two operators listed are cellular companies, PCS operator listed first. © 1997 Paul Kagan Associates, Inc. All rights reserved.

(continued on next page)

PCS COMPETITIVE MARKETS: PRICING STRATEGIES (continued from P. 8)

Market	Operator	-----Low Use-----		-----Mid-Range-----		-----Heavy Use-----				
		Rev./ Sub	MOU Cost/Min	Rev./ Sub	MOU Cost/Min	Rev./ Sub	MOU Cost/Min			
Dallas-FtWch.	PrimeCo PCS	\$30.75	15	\$2.05	\$60.00	150	\$0.40	\$130.00	500	\$0.26
Dallas-FtWch.	Sprint PCS	21.85	15	1.46	59.50	150	0.40	122.20	500	0.24
Dallas-FtWch.	SBC Comm.	37.15	15	2.48	63.95	150	0.43	149.99	500	0.30
Dallas-FtWch.	AT&T Wireless *	24.99	15	1.67	75.99	150	0.51	141.99	500	0.28
	Cellular avg.	31.07		2.07	69.97		0.47	145.99		0.29
	† Diff. between cellcos	49¢		49¢	19¢		19¢	6¢		6¢
	PCS avg.	26.30		1.75	59.75		0.40	126.10		0.25
	† Diff. between avg. cellco/PCS	18¢		18¢	17¢		17¢	16¢		16¢
El Paso	Western Wireless	19.95	30	0.67	59.95	200	0.30	99.95	500	0.20
El Paso	GTE	33.95	30	1.13	75.45	200	0.38	122.95	500	0.24
El Paso	BANM	29.99	30	1.00	72.39	200	0.36	115.49	500	0.23
	Cellular avg.	31.97		1.07	73.92		0.37	118.72		0.24
	† Difference between cellcos	13¢		13¢	4¢		4¢	6¢		6¢
	† Diff. between avg. cellco/PCS	60¢		60¢	23¢		23¢	19¢		19¢
Houston	PrimeCo PCS	34.50	30	1.15	60.80	160	0.38	98.75	325	0.30
Houston	Aerial	28.80	30	0.96	79.80	160	0.50	85.50	325	0.26
Houston	GTE Mobilnet	36.40	30	1.21	79.40	160	0.50	122.50	325	0.38
Houston	AT&T Wireless	31.99	30	1.07	79.99	160	0.50	119.99	325	0.37
	Cellular avg.	34.20		1.24	79.70		0.50	121.25		0.37
	† Difference between cellcos	14¢		14¢	1¢		1¢	2¢		2¢
	PCS avg.	31.65		1.06	70.30		0.44	92.13		0.28
	† Diff. between avg. cellco/PCS	8¢		8¢	13¢		13¢	32¢		32¢
Indianapolis	Sprint PCS	29.60	60	0.49	56.30	160	0.35	87.70	325	0.27
Indianapolis	GTE Mobilnet	30.75	60	0.51	56.95	160	0.36	89.05	325	0.27
Indianapolis	BellSouth	27.95	60	0.47	61.15	160	0.38	94.95	325	0.29
	Cellular avg.	29.35		0.49	59.05		0.37	92.00		0.28
	† Difference between cellcos	10¢		10¢	7¢		7¢	7¢		7¢
	† Diff. between avg. cellco/PCS	1¢		1¢	5¢		5¢	5¢		5¢
Kansas City	Sprint PCS	27.00	60	0.45	57.00	180	0.32	279.80	1,500	0.19
Kansas City	Aerial	30.15	60	0.50	54.15	180	0.30	311.95	1,500	0.21
Kansas City	SBC Comm.	32.95	60	0.55	80.95	180	0.45	124.95	1,500	0.08
Kansas City	AT&T Wireless	29.70	60	0.50	74.10	180	0.41	99.00	1,500	0.07
	Cellular avg.	31.33		0.52	77.53		0.43	111.98		0.07
	† Difference between cellcos	11¢		11¢	9¢		9¢	26¢		26¢
	PCS avg.	28.58		0.48	55.58		0.31	295.88		0.20
	† Diff. between avg. cellco/PCS	10¢		10¢	39¢		39¢	164¢		164¢
Minneapolis	Aerial	35.05	45	0.78	69.95	200	0.35	109.95	500	0.22
Minneapolis	AirTouch	29.95	45	0.67	77.95	200	0.39	150.95	500	0.30
Minneapolis	AT&T Wireless *	30.24	45	0.67	69.99	200	0.35	143.49	500	0.29
	Cellular avg.	30.10		0.67	73.97		0.37	147.22		0.29
	† Difference between cellcos	1¢		1¢	11¢		11¢	5¢		5¢
	† Diff. between avg. cellco/PCS	16¢		16¢	6¢		6¢	34¢		34¢
New Orleans	PrimeCo PCS	20.80	10	2.08	45.20	120	0.38	131.00	450	0.29
New Orleans	Sprint PCS	20.00	10	2.00	50.00	120	0.42	149.00	450	0.33
New Orleans	BellSouth *	21.20	10	2.12	58.00	120	0.48	158.50	450	0.35
New Orleans	Radiofone	20.45	10	2.05	57.60	120	0.48	155.00	450	0.34
	Cellular avg.	20.83		2.08	57.80		0.48	156.75		0.35
	† Difference between cellcos	4¢		4¢	1¢		1¢	2¢		2¢
	PCS avg.	20.40		2.04	47.60		0.40	140.00		0.31
	† Diff. between avg. cellco/PCS	2¢		2¢	21¢		21¢	12¢		12¢
Orange County	Sprint PCS	38.00	45	0.84	50.00	250	0.20	90.00	600	0.15
Orange County	AirTouch *	49.99	45	1.11	131.19	250	0.52	239.99	600	0.40
Orange County	L.A. Cellular *	49.99	45	1.11	131.19	250	0.52	239.99	600	0.40
	Cellular avg.	49.99		1.11	131.19		0.52	239.99		0.40
	† Difference between cellcos	0		0	0		0	0		0
	† Diff. between avg. cellco/PCS	32¢		32¢	162¢		162¢	167¢		167¢
Phoenix	Sprint PCS	19.95	30	0.67	61.05	180	0.34	94.95	420	0.23
Phoenix	AT&T	24.99	30	0.83	68.79	180	0.38	105.59	420	0.25
Phoenix	AirTouch	32.95	30	1.10	79.95	180	0.44	161.75	420	0.39
Phoenix	BANM	29.99	30	1.00	77.39	180	0.43	152.39	420	0.36
	Cellular avg.	31.47		1.05	78.67		0.44	157.07		0.37
	† Difference between cellcos	10¢		10¢	3¢		3¢	6¢		6¢
	PCS avg.	22.47		0.75	64.92		0.36	100.27		0.24
	† Diff. between avg. cellco/PCS	40¢		40¢	21¢		21¢	57¢		57¢

* Digital cellular pricing. Second two operators listed are cellular companies, one or two PCS operators per market listed first. © 1997 Paul Kagan Assoc., Inc. All rights reserved.

(continued on next page)

PCS COMPETITIVE MARKETS: PRICING STRATEGIES (continued from P. 9)

Market	Operator	-----Low Use-----		-----Mid-Range-----		-----Heavy Use-----	
		Rev./ Sub	Blended MOU Cost/Min	Rev./ Sub	Blended MOU Cost/Min	Rev./ Sub	Blended MOU Cost/Min
Pittsburgh, PA	Sprint PCS	\$29.00	60 \$0.48	\$79.00	280 \$0.28	\$101.60	500 \$0.20
Pittsburgh, PA	Aerial	27.95	60 0.47	81.55	280 0.29	92.95	500 0.19
Pittsburgh, PA	BANM *	29.99	60 0.50	81.19	280 0.29	105.19	500 0.21
Pittsburgh, PA	AT&T Wireless *	31.99	60 0.53	69.99	280 0.25	99.99	500 0.20
	Cellular avg.	30.99	0.52	75.59	0.27	102.59	0.21
	† Difference between cellcos	7¢	7¢	16¢	16¢	5¢	5¢
	PCS avg.	28.48	0.47	80.28	0.29	97.28	0.19
	† Diff. between avg. cellco/PCS	9¢	9¢	6¢	6¢	5¢	5¢
Sacramento	FBMS	25.95	50 0.52	34.95	120 0.29	49.95	300 0.17
Sacramento	AirTouch	29.99	50 0.60	46.79	120 0.39	63.49	300 0.28
Sacramento	AT&T Wireless *	30.79	50 0.62	39.99	120 0.33	76.59	300 0.26
	Cellular avg.	30.39	0.61	43.39	0.36	80.04	0.27
	† Difference between cellcos	3¢	3¢	17¢	17¢	9¢	9¢
	† Diff. between avg. cellco/PCS	17¢	17¢	24¢	24¢	60¢	60¢
San Antonio	PrimeCo PCS	32.50	30 1.08	67.80	220 0.31	140.00	600 0.23
San Antonio	Sprint PCS	25.00	30 0.83	65.00	220 0.30	127.80	600 0.21
San Antonio	SBC Comm.	29.95	30 1.00	86.95	220 0.40	149.95	600 0.25
San Antonio	AT&T Wireless *	34.15	30 1.14	70.00	220 0.32	165.00	600 0.28
	Cellular avg.	32.05	1.07	78.48	0.36	157.48	0.26
	† Difference between cellcos	14¢	14¢	24¢	24¢	10¢	10¢
	PCS avg.	28.75	0.96	66.40	0.30	133.90	0.22
	† Diff. between avg. cellco/PCS	11¢	11¢	18¢	18¢	18¢	18¢
San Francisco	FBMS	19.95	10 2.00	87.95	180 0.49	69.95	400 0.17
San Francisco	AT&T Wireless *	29.19	10 2.92	82.59	180 0.46	118.74	400 0.30
San Francisco	GTE Mobilnet *	34.15	10 3.42	80.35	180 0.45	125.95	400 0.31
	Cellular avg.	31.67	3.17	81.47	0.45	122.35	0.31
	† Difference between cellcos	17¢	17¢	3¢	3¢	6¢	6¢
	† Diff. between avg. cellco/PCS	59¢	59¢	8¢	8¢	75¢	75¢
Seattle	GTE PCS	24.95	60 0.42	34.95	100 0.35	69.95	300 0.23
Seattle	AirTouch	37.30	60 0.62	49.95	100 0.50	99.95	300 0.33
Seattle	AT&T Wireless *	38.49	60 0.64	43.79	100 0.44	99.99	300 0.33
	Cellular avg.	37.90	0.63	46.87	0.47	99.97	0.33
	† Difference between cellcos	3¢	3¢	14¢	14¢	0	0
	† Diff. between avg. cellco/PCS	52¢	52¢	34¢	34¢	43¢	43¢
Spokane, WA	Sprint PCS	30.00	60 0.50	64.80	180 0.36	95.00	300 0.32
Spokane, WA	GTE PCS	24.95	60 0.42	52.55	180 0.29	69.95	300 0.23
Spokane, WA	AirTouch	37.30	60 0.62	78.75	180 0.44	99.95	300 0.33
Spokane, WA	AT&T Wireless *	38.49	60 0.64	69.99	180 0.39	99.99	300 0.33
	Cellular avg.	37.90	0.63	74.37	0.41	99.97	0.33
	† Difference between cellcos	3¢	3¢	13¢	13¢	0	0
	PCS avg.	27.48	0.46	58.68	0.33	82.48	0.27
	† Diff. between avg. cellco/PCS	38¢	38¢	27¢	27¢	21¢	21¢
Toledo	Sprint PCS	20.00	50 0.40	40.00	120 0.33	160.00	600 0.27
Toledo	360 Comm.	37.45	50 0.75	56.95	120 0.47	149.00	600 0.28
Toledo	AirTouch	30.99	50 0.62	61.99	120 0.52	155.99	600 0.26
	Cellular avg.	34.22	0.68	59.47	0.50	152.50	0.25
	† Difference between cellcos	21¢	21¢	9¢	9¢	5¢	5¢
	† Diff. between avg. cellco/PCS	71¢	71¢	49¢	49¢	5¢	5¢
Tulsa, OK	Sprint PCS	35.80	80 0.45	71.60	200 0.36	180.00	900 0.20
Tulsa, OK	Western Wireless	30.14	80 0.38	59.95	200 0.30	155.95	900 0.17
Tulsa, OK	U.S. Cellular *	35.95	80 0.45	57.95	200 0.29	208.95	900 0.23
Tulsa, OK	AT&T Wireless *	49.79	80 0.62	101.19	200 0.51	225.99	900 0.25
	Cellular avg.	42.87	0.54	79.57	0.40	217.47	0.24
	† Difference between cellcos	38¢	38¢	75¢	75¢	8¢	8¢
	PCS avg.	32.97	0.41	65.78	0.33	167.98	0.19
	† Diff. between avg. cellco/PCS	30¢	30¢	21¢	21¢	29¢	29¢

* Digital cellular pricing. Second two operators listed are cellular companies, one or two PCS operators per market listed first. © 1997 Paul Kagan Assoc., Inc. All rights reserved.

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PCS VERSUS CELLULAR:

A QUARTERLY SURVEY OF WIRELESS PRICING IN MARKETS
WHERE PCS OPERATORS HAVE BEGUN SERVICE



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EQUITIES RESEARCH

INDUSTRY REPORT

EXECUTIVE SUMMARY

- Our survey of 36 markets in which PCS operators have begun offering service found that the PCS pricing discount relative to cellular service ranges from 3.5% to 14.4%, depending on plan size. In the eastern region, we have seen the most significant pricing differential, while in the western region, we have seen the most aggressive response by cellular providers to PCS pricing.
- The marked narrowing of PCS vs. cellular pricing has resulted from: 1) significantly more aggressive pricing responses coming from the cellular providers than we had seen in previous surveys and 2) a moderate decrease (and, in some cases, increase) in PCS prices.
- The packaging of large "baskets" of minutes is becoming more prevalent among both the cellular and PCS service providers, encouraging subscribers to use their phones more. Whereas in previous surveys we had seen one or two service providers offering these large baskets, we are now seeing up to four providers doing this. These baskets appear to be increasing in size in many markets.
- Since our June survey, overall wireless (PCS and cellular) pricing has decreased 4.4% to 20.3%, depending on plan size. We believe that this seemingly large decrease, particularly in mid-level and high-end plans, is being driven by the large baskets of minutes offered by many carriers. With the average PCS subscriber using only 300 to 400 minutes per month, service providers must feel that the likelihood of subscribers using all of these minutes is low. However, the psychological shift from variable to fixed rate pricing is necessary to encourage customers to use their wireless phones instead of wireline phones.
- In the 17 survey markets in which both A-Block and B-Block PCS operators are in service, the average PCS discount to cellular is 7.1%, 26.2%, and 5.5%, respectively for the low-end, mid-level, and high-end plans.

METHODOLOGY

In an effort to understand the pricing environment in several areas where PCS operators had begun service before September 30, 1997, we contacted the PCS and cellular operators in 36 markets to obtain their current pricing plans (available between September 15th and 30th). While most carriers have several pricing plans, we have found that they were not always easily comparable. However, we detect a pattern of three general levels of pricing plans, targeted at different sets of wireless users. We classify these as low-end, mid-level, and high-end user plans. We note that "safety pricing plans," which we define as those with a lower monthly access fee, few or no free peak minutes included, and a relatively high per-minute charge, are not included in this study. Also, we do not try to adjust monthly charges for activation fees, the price of the handset, taxes, or long distance charges.

We define low-end plans as those with a fairly low monthly access charge and 0 to 100 free peak or off-peak minutes (usually a 50%/50% mix) bundled in them. To put these plans on par with one another, we calculate the **lowest overall monthly charge** for 100 minutes of local usage. Our assumption for the mix of additional minutes is a 50%/50% blend of peak and off-peak minutes. Our definition of the mid-level plan is the package that leads to the lowest overall monthly charge for 250 minutes. Finally, the high-end plan is defined as the plan resulting in the lowest overall monthly charge for 1,000 minutes of use. We have found several plans that have a higher number of free minutes or unlimited usage, but some of these plans are not the best alternative for the 1,000-minute user. Where available, we use pricing plans for digital cellular service rather than analog.

The PCS and cellular pricing plans in each region are discussed separately to determine if one region is showing signs of more or less competitive activity relative to the others. We compare the PCS plan (or

plans in the cities where two PCS service providers are in operation) to the wireline and non-wireline cellular plans. We then calculate the discount at which the PCS plans in each region are offered relative to each of the established cellular carriers, as well as an average discount of the PCS plan (or plans) relative to both cellular carriers. Additionally, we calculate the change in the price of all the plans from the June survey for each wireless service provider.

PROMOTIONAL PRICING

We found a few general themes in the promotions offered by some of the cellular and PCS service providers. Several specific promotional plans appear many times in different regions and markets. The most commonly offered promotional plans follow:

- Sprint PCS continues to offer some of the most aggressive pricing plans, but at smaller discounts than we saw in June's survey. Sprint is offering two "dime-a-minute" calling plans nationwide, offering 400-minutes and 600-minutes for \$40 and \$60, respectively. These promotions are Sprint's standard 200-minute and 300-minute plans with doubled minutes (e.g., 200 peak minutes *plus* 200 off-peak minutes), and the rates are good until the year 2000. Gone is the "5¢-a-minute" plan, which offered 1,500-minutes for \$75 (though the company is offering a 1,000-minute plan for \$75 in certain California markets).

We believe that it is important to emphasize what Sprint is doing here—raising prices. The introduction of the dime-a-minute plans raised the prices of Sprint's low-end and high-end plans in most cities (the California markets being an obvious exception, due to the aforementioned 1,000-minute plan). Although Sprint's service is still offered at a discount to cellular in most markets, it is not being offered at quite the deep discounts that we saw in June. This appears to make a strong statement for PCS in general, as we view the raising of prices a positive step for the industry.

- We found that Powertel has moved to a 10¢-a-minute strategy, offering packages of 100-minutes, 300-minutes, and 600-minutes for \$10, \$30, and \$60, respectively. The 100-minute plan is a departure from what we saw in the June survey, in which the company offered a low-end 60-minute plan for \$10, with additional minutes at 50¢-a-minute. We note that Powertel has decided to discontinue the \$10 plan as of October 1.
- On the cellular side, GTE has dropped the single calling plan that we saw in the June survey, moving to plans offering moderate-to-high volumes of packaged minutes at reasonable rates. These plans have resulted in decreases in the prices of our survey's plans up to 65.1%, particularly in the company's high-end offerings. In several markets, GTE is offering a 1,400-minute plan costing \$70 or \$100. These new plans have also made GTE more competitive in many cities, especially in the Southeast and Midwest.
- The packaging of off-peak minutes seems to be gaining popularity among both the cellular and PCS providers. Several companies have some form of "basket minutes" in their service offerings. From PrimeCo's 300-minute basket of weekend minutes for \$4.95 (offered in several markets nationwide) to Ameritech's unlimited free local off-peak minutes for a year (offered in Chicago), wireless providers are encouraging increased phone usage. Other providers offering baskets include: Aerial Communications, GTE, AT&T, AirTouch, SBC Communications, Sprint, BellSouth, 360°, Bell Atlantic/NYNEX Mobile (BANM), and ALTEL.

The stated reasons for the promotions vary across the board. Some PCS service providers candidly admit that they are using promotions to compensate for coverage that will be inferior to cellular coverage for a period of time. The special promotions were also mentioned as being important to establishing brand awareness. Among the cellular service providers, the promotions seem to be more defensive in nature, as these operators look to retain their more lucrative customer bases, especially the higher-end users.

SEQUENTIAL QUARTER PRICE AND COST CHANGES

A summary comparing the market-by-market pricing changes from the June survey is presented in Figure 1, while details of the price changes for each region can be found in Appendices Q through T.

Overall, we find that wireless service (cellular and PCS) pricing has declined from 4.4% to 20.3% in the U.S. since our June survey. The highest percentage decline is in the mid-level plan, followed closely by the high-end plan. We note that in many markets, the substantial price declines in the mid-level and high-end plans are due to the cellular companies decreasing their prices to adjust to the price levels established by the new PCS carriers. That stated, there are certain PCS carriers that have decreased mid-level or high-end pricing by more than 50% in several markets. These include: Sprint PCS (Fresno and San Diego), PrimeCo (Norfolk, Richmond, Jacksonville, Houston, and San Antonio), GTE (Cincinnati, Seattle, and Spokane) and Western PCS (Albuquerque, Honolulu, and Salt Lake City). However on the lower-end plan, the change is less drastic, and we actually see some PCS operators increasing their pricing for these customers.

By region, we are seeing the largest price declines in the West (5.7% to 33.9%), one of the more stable areas in the country in our June survey. Sprint, GTE, and Western PCS promotions for the mid-level and high-end plans (described above in the promotions section of this report) were responsible for much of the significant price declines. The Midwest has the highest price declines for the mid-level plans (29.3%), but fairly moderate price declines in the low-end and high-end plans, 5.2% and 15.4%, respectively. The Des Moines, Houston and Dallas markets are responsible for much of these declines, especially with prices for the mid-level plans. New Sprint PCS and PrimeCo promotions are the primary drivers of these declines, while Western PCS is contributing to the declines in Des Moines.

The East Region was this survey's most stable region, with price changes ranging from a 1.1% increase on the low-end plans to a 13.0% decrease for the mid-level price plans. In several markets, cellular operators have adjusted prices to compete with new PCS operators, while PrimeCo, Sprint PCS and GTE showed some aggressive price declines in various PCS markets. The Southeast, with price declines ranging from 6.9% to 17.6% on average, showed some signs of increased price competition. PrimeCo showed signs of more aggressive PCS pricing in New Orleans and Jacksonville, while GTE (Knoxville, Memphis, and Tampa) and Radiophone (New Orleans) were aggressive price promoters on the cellular side.

Since we have focused a great deal on wireless consumer price changes in this report, we thought it would be prudent to look at the changes in the cash cost per subscriber from the wireless carriers' perspective. To do this, we compare the average cash cost per subscriber for the five wireless operators we follow (AirTouch - domestic, Omnipoint, Palmer Wireless, Rural Cellular, and Western Wireless) for the second quarter to our projections for the third quarter. We find that expectations are for the cash costs per subscriber to decline about 4.7% sequentially. This compares to our projections that ARPUs (Average Revenue Per Unit) should decline by only 1.6% sequentially. While this handful of operators is certainly a small sample, it is easy to understand, based on our projections, why carriers are willing to discount their prices by 4.4% sequentially (low-end plans) if costs are dropping much faster. The higher price declines for the mid-level and high-end plans (20.3% and 19.7%, respectively) are a little more disturbing to us. We note that much of this price decline is due to significant short-term promotional activity in a few cities. We conclude that the economies of scale and lower interconnection costs are contributing to lower operator costs, thus justifying rational price declines to attract new customers.

FIGURE 1
CONSOLIDATED OVERALL WIRELESS AVERAGE PRICE CHANGES SINCE THE JUNE SURVEY

EAST	Albany, NY	Cincinnati	DC/Baltimore	New York	Norfolk	Philadelphia	Pittsburgh	Richmond	Syracuse	AVERAGE	
Lower-End Plan	29.2%	-4.8%	0.0%	-11.8%	-11.8%	-0.5%	-3.7%	-11.3%	24.7%	1.1%	
Mid-Level Plan	-12.0%	-6.3%	5.4%	-21.0%	-31.5%	-7.9%	-21.9%	-30.9%	8.8%	-13.0%	
High-End Plan	-6.9%	-29.0%	11.6%	-24.6%	-30.2%	28.5%	-22.8%	-21.8%	18.0%	-8.6%	
SOUTHEAST	Charlotte	Greenville	Jacksonville	Knoxville	Memphis	Miami	Montgomery	New Orleans	Raleigh	Tampa	AVERAGE
Lower-End Plan	-4.6%	0.0%	-27.1%	9.0%	-45.1%	53.4%	-22.2%	-3.3%	-20.4%	-8.5%	-6.9%
Mid-Level Plan	-6.2%	-7.0%	-11.3%	-11.1%	-27.5%	-9.6%	0.0%	-27.7%	-19.2%	-22.8%	-14.2%
High-End Plan	-10.7%	-10.7%	-10.9%	-16.7%	-41.7%	-22.8%	-7.5%	-14.9%	-8.5%	-31.7%	-17.6%
MIDWEST	Chicago	Dallas	Des Moines	Houston	Kansas City	Milwaukee	Okl. City	San Antonio	AVERAGE		
Lower-End Plan	-12.8%	1.9%	6.8%	-26.3%	20.8%	-21.3%	1.4%	-12.1%	-5.2%		
Mid-Level Plan	-28.7%	-31.0%	-34.4%	-51.3%	-12.1%	-38.1%	-13.3%	-25.2%	-29.3%		
High-End Plan	-20.5%	-7.1%	-8.9%	-62.7%	22.3%	-30.0%	-9.4%	-7.2%	-15.4%		
WEST	Albuquerque	Fresno	Honolulu	Las Vegas	Portland	Salt Lake City	San Diego	Seattle	Spokane	AVERAGE	
Lower-End Plan	-6.7%	-17.4%	-7.4%	-23.8%	21.0%	-2.9%	-17.7%	-1.8%	5.3%	-5.7%	
Mid-Level Plan	-28.5%	-37.0%	-28.8%	-19.7%	-23.6%	-13.4%	-26.8%	-27.9%	-29.4%	-26.1%	
High-End Plan	-61.7%	-38.3%	-28.5%	-15.8%	-24.7%	-2.8%	-29.8%	-61.9%	-41.8%	-33.9%	
TOTAL U.S.	Average	Average	Average	Average	Average	Average	Average	Average	Average	AVERAGE	
Lower-End Plan	1.3%	-5.1%	-6.9%	-13.2%	-3.8%	7.2%	-10.6%	-7.1%	3.2%	-4.4%	
Mid-Level Plan	-18.8%	-20.3%	-17.3%	-25.8%	-23.7%	-17.3%	-15.5%	-27.9%	-13.3%	-20.3%	
High-End Plan	-25.0%	-21.3%	-9.2%	-29.9%	-18.6%	-6.8%	-17.4%	-26.5%	-10.8%	-19.7%	

The significant decline in mid-level and high-end pricing is driven by the increased number and size of the bundled minute promotions, many of which include 1,000 minutes of airtime or more for a fixed amount. However, if these minutes go unused, the monthly fee remains unchanged. We note that the average cellular usage ranges from 100 to 130 minutes per month. Some PCS providers have stated that their average usage is roughly three times that, at 300 to 400 minutes per month. We conclude that the service providers must feel that it is unlikely that a significant number of subscribers will use all of these promotional minutes; and, the variable costs associated with these unused minutes (i.e., interconnection costs) are likely not to be realized for many subscribers. Thus, our seeing the large price declines in the mid-level and high-end plans are of less concern than would otherwise seem.

CONCLUSIONS

Our September survey found continued promotional pricing in many markets throughout the U.S. We believe that much of the additional pricing decreases noted in this survey are due to the response of the cellular providers to new pricing plans offered by the new PCS carriers. This explains why the PCS discount relative to cellular pricing has narrowed while we continue to see overall pricing decline. While the average PCS discount to cellular appears to be acceptable and actually lower than our previous surveys, we continue to see substantial discounts in some markets due to aggressive pricing promotions (see Figure 2). The average PCS discounts relative to cellular, based on our findings, are as follows:

East:	6.7% to 27.9% discount, the most heavily discounted of our four regions
Southeast:	1.8% premium (high-end plan) to a 21.4% discount (low-end plan)
Midwest:	1.4% (high-end plan) to a 26.9% discount (mid-level plan)
West:	4.5% premium (lower-end plan) to a 9.2% discount (mid-level plan), making the West the area where we have seen cellular competitors discount their pricing most aggressively relative to PCS competition.
Overall:	3.5% to 14.4% discount, on average. This represents a much smaller pricing differential than we saw in the June survey (14.5% to 18.2% discounts)

In the 17 markets in which both A and B block PCS operators are in service, the average PCS discount to cellular is 7.1%, 26.2% and 5.5%, respectively, for the low-end, mid-level, and high-end plans. While the low-end and high-end plans are within a few percentage points of the discounts seen on a nationwide basis, we note that the mid-level plan appears to be where the PCS providers are quite aggressive in these 17 markets, exhibiting an average discount 11.8% higher than the national average.

An addition to this survey is the sequential comparisons of price changes by market (see Figure 1). The average price change by region from the first to second quarter surveys is:

East:	1.1% increase on the low-end plans (driven partly by the elimination of the New York City promotions) to a 13.0% decline in the mid-level plans
Southeast:	6.9% to 17.6% declines, the largest change in the high-end plans
Midwest:	5.2% to 29.3% declines, the most significant change being in the mid-level plans, especially in markets with 2 PCS providers
West:	5.7% to 33.9% decreases, with the largest changes coming in the markets with 2 PCS providers
Overall:	4.4% to 20.3% declines, with the highest decline on the mid-level plans

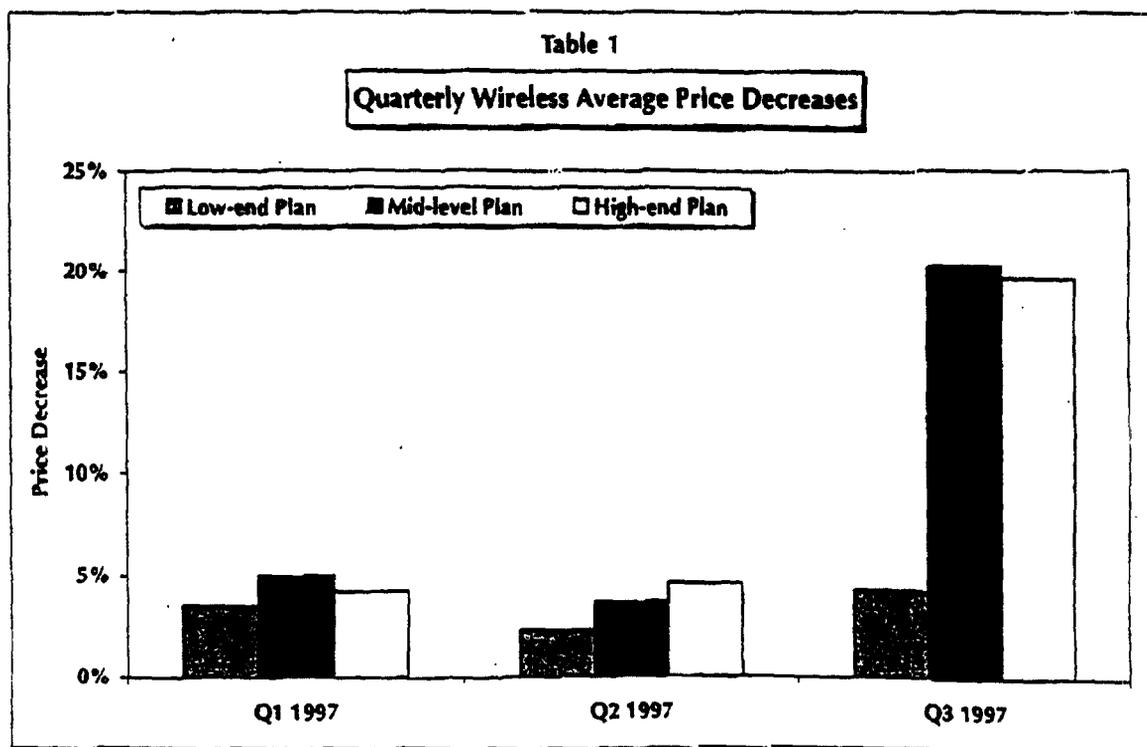
In a limited sample of wireless operators, we found that expectations are for second quarter cash costs per subscriber to decline about 4.7% sequentially. If this does in fact occur, it seems rational that these operators are reducing prices at the rates of 1.6% sequentially. However, we note that price declines as

**FIGURE 2
CONSOLIDATED AVERAGE PCS DISCOUNTS TO CELLULAR**

EAST	Albany, NY	Cincinnati	DC/Baltimore	New York	Norfolk	Philadelphia	Pittsburgh	Richmond	Syracuse	AVERAGE	
Lower-End Plan	19.3%	21.8%	-1.0%	9.8%	5.2%	8.6%	-7.2%	5.2%	-1.9%	6.7%	
Mid-Level Plan	45.2%	0.4%	7.0%	50.1%	25.9%	53.4%	36.0%	21.4%	11.5%	27.9%	
High-End Plan	20.9%	64.9%	9.8%	36.8%	40.7%	47.4%	3.1%	55.0%	-74.8%	22.7%	
SOUTHEAST	Charlotte	Greenville	Jacksonville	Knoxville	Memphis	Miami	Montgomery	New Orleans	Raleigh	Tampa	AVERAGE
Lower-End Plan	1.7%	0.8%	64.6%	-13.1%	69.0%	15.2%	67.9%	27.7%	-8.3%	-11.8%	21.4%
Mid-Level Plan	-9.6%	-5.8%	59.6%	-63.9%	34.1%	37.2%	35.4%	32.3%	-30.5%	-16.4%	7.2%
High-End Plan	-15.4%	-6.9%	32.2%	-72.3%	-3.7%	37.7%	-4.2%	39.9%	-9.5%	-16.2%	-1.8%
MIDWEST	Chicago	Dallas	Des Moines	Houston	Kansas City	Milwaukee	Okl. City	San Antonio	AVERAGE		
Lower-End Plan	9.9%	23.7%	-14.1%	9.6%	-24.7%	-11.9%	9.6%	28.4%	3.8%		
Mid-Level Plan	30.9%	23.7%	20.0%	4.3%	34.5%	21.2%	43.3%	37.0%	26.9%		
High-End Plan	-1.4%	-30.0%	-33.6%	15.1%	-21.9%	19.5%	25.5%	38.1%	1.4%		
WEST	Albuquerque	Fresno	Honolulu	Las Vegas	Portland	Salt Lake City	San Diego	Seattle	Spokane	AVERAGE	
Lower-End Plan	20.1%	-8.6%	-0.6%	-61.2%	-2.1%	9.4%	-28.4%	15.6%	15.6%	-4.5%	
Mid-Level Plan	-42.5%	24.7%	30.6%	-35.4%	34.3%	33.9%	-34.1%	35.7%	35.7%	9.2%	
High-End Plan	-5.5%	64.1%	31.3%	-26.2%	-83.0%	50.2%	34.7%	-40.0%	-5.0%	2.3%	
TOTAL U.S.	Average	Average	Average	Average	Average	Average	Average	Average	Average	AVERAGE	
Lower-End Plan	12.8%	9.4%	12.2%	-13.7%	11.9%	5.3%	10.5%	19.2%	1.8%	-11.8%	5.8%
Mid-Level Plan	6.0%	10.7%	29.3%	-11.2%	32.2%	36.4%	20.1%	31.6%	5.6%	-16.4%	14.4%
High-End Plan	-0.3%	23.0%	9.9%	-11.7%	-17.0%	38.7%	14.8%	23.3%	-29.8%	-16.2%	3.5%

high as 18.5% could lead to problems for some operators if they do not continue to reduce costs (i.e., variable interconnection costs and the spreading of fixed costs) and start to pull back of promotional activities. Also, much of the mid-level and high-end price decreases are driven by large bundled minute plans with a high likelihood that all of these minutes will not be used. In our opinion, without these large bundled-minute plans (over 1,000 minutes per month), the price declines in the mid-level and high-end plans would have been much less severe.

A summary of the price decreases over the last 3 surveys is found in Table 1 below.



PRESENTATION OF RESULTS

We discuss each region separately in this report. The summary results of our survey are presented in Figures 3 through 6, representing the Relative Price Comparisons for the East, Southeast, Midwest, and West Regions. These figures detail the discounts at which the PCS service is priced relative to the wireline and non-wireline cellular carriers, as well as an average discount to all cellular. Detailed wireless price comparisons and price changes by service provider and market are included in Appendices A through T.