

**MOBILE PHONES AND YOUTH:
A LOOK AT THE US STUDENT MARKET**

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1 Introduction: Spotlight on the youth market

The youth market today is an extremely technology-savvy one, a segment of society that has been active in transforming the application and use of digital technologies in unprecedented ways. This market segment—here defined as the range of teenagers and young adults between the ages of 12–29 is more comfortable with using the Internet, building websites, communicating via mobile phones and playing with digital gadgetry than any previous generation.

Using everything from instant messaging on the Internet to text messaging on private mobile phones, teenagers have found more ways than ever to use technology—and to assert their independence whilst keeping their parents “out of the loop”. This is arguably related to their need to assert their individuality. Parents today, in response, are by and large manifesting a backlash from more permissive times, as they attempt to curb the freedoms that digital communication technologies invite. The appetite of the youth market for technology is manifested in various ways—and mobile phones are being increasingly seen as essential communications gear among teens worldwide. The expanding functionality of mobile phones is feeding the frenzy particularly for young people. Almost two thirds of Americans aged 16 to 29 years of age would choose a mobile phone ahead of a landline phone, compared to 31 per cent of those aged over 50 years, according to the LG Mobile Phones Personal Call Survey.¹ In this regard, the contrast between the communication habits and behavior of this age group and their baby boomer predecessors is stark. Younger users have a fast adoption curve, and a strong desire to stay connected to friends, although they tend to be prone to handset fads, and long-term prospects for innovative features are uncertain.²

In fact, one study indicates that consumers under age 25 (as well as some upscale) consumers will be chief among drivers for the demand for third-generation mobile services, much as they drove the growth of the overall mobile phone market.³ The interest of the youth segment is particularly strong in Western Europe and the United States.

Figure 1: Interest in 3G applications

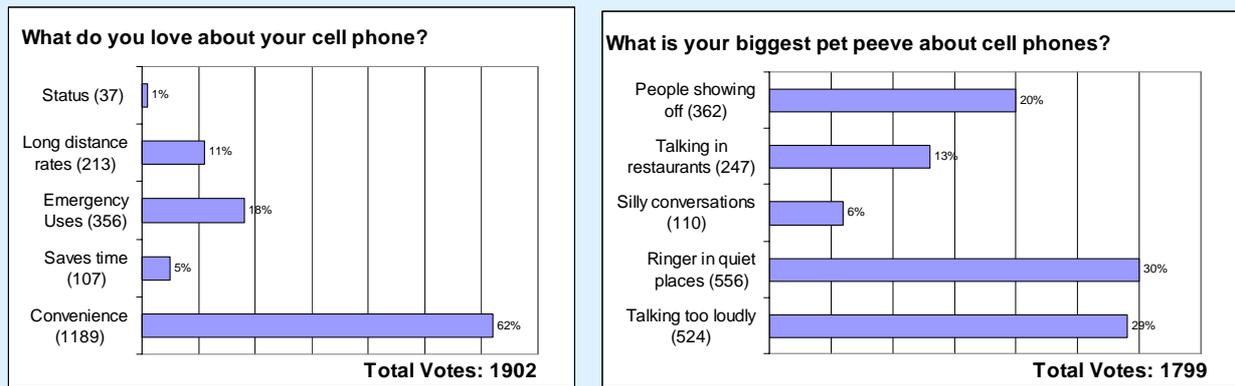
	W. Europe	E. Europe	USA
Total	22%	26%	25%
Under 25	37%	30%	45%
25 to 34	27%	26%	26%
35 to 49	19%	25%	27%
50+	9%	24%	10%
("High Interest" based upon a six-point interest scale, where ratings of 5 and 6 indicate high interest.)			

Note: Among current Internet users/mobile phone owners.

Source: Cellular Online.

Owning a mobile phone has become a practical necessity, as well as a status symbol for young people who are, as ever, grappling with the forces of peer pressure and conformity. The view of mobile handsets as a fashion accessory is well developed in this market segment, perhaps in part because young people tend to be early adopters and thus more likely to transcend the mere functionality of the devices they adopt. Moreover, a sense of security has become constructed around mobile devices, which youth in general have begun to perceive as a lifeline of sorts to their parents and friends. Young people prefer mobile phones and 70 per cent say they stay in touch with friends and family more after getting a mobile; these users are also more likely to use various features of mobile phones and customize them to suit their needs.⁴ In the wake of this popularity, new websites have cropped up. One of them, CellManners.com, tracks anecdotal/popular opinion about the feelings people have toward their mobile devices, and about the way they are used in public (see Figure 2). The social and behavioral aspects of mobile phones have been garnering so much attention recently that new forms of measurement and surveying have begun to emerge.

Figure 2: General opinions of population from CellManners.com



Source: Cell Manners.com.

Putting this phenomenon into context is important for two reasons: first, mobile technology is one component of the “information revolution”, and much of its use is contingent upon familiarity and general ease with other forms of digital technology. Second, an understanding of the level of access that young people have to “high tech stuff”, and how old they are when they first have it, is a likely indicator for the probability of their future ownership of such goods once they are paying their own bills. The 2003 Roper Youth Report shows that in the United States, more than two in three kids have their own TV in their bedroom, more than one in eight has a DVD player in their room, and one in four has a DVD player somewhere else in the house.⁵ More than two-thirds have a PC, and almost all of these have Internet access. Most children with net access surf at least once a week, while a third go online two to three times a week, and a hardcore 22 per cent surf every day.⁶ However, PC ownership and internet use seem to have reached a plateau - while both grew by more than 50 per cent during the five years to 2001, the numbers have remained static in the past two years.⁷

Young people comprised a multi-billion dollar market for mobile phones and services by the end of 2003, according to a recent report by the Wireless World Forum (W2F).⁸ In an 2000 study entitled "Look Who's in the Driver's Seat Now," from Cahners In-Stat, evidence was found indicating that non-college attending youths in the United States from ages 18-24 will be the largest segment of the youth market in the next few years.⁹ Evidence from the survey we conduct in this paper of young people in educational settings may serve to refute the validity of this assertion. Needless to say, this widely discernible trend has not been lost on those who care most: mobile phone carriers. Many have clearly set their sights on the youth market, targeting it not only because these represent tomorrow's adult consumers, but because they also command a significant portion of their parents' disposal income. These young people are the big spenders of tomorrow.

This paper will address the key characteristics of the US youth mobile market, including market forecasts, the impact of the Internet, and the phenomena of going “completely wireless”. It will also examine the way young people relate to the functionality of mobile phones, review various trends of youth usage around the world, as well as assess observable phenomena. To this end, it will also present the results of an independent survey conducted on young people in high school, college and graduate school, designed to explore the correlations between gender, age, and patterns of mobile phone usage.

2 Youth market characteristics and trends

2.1 Market size

There were over 103 million mobile phone users aged 5 to 24 as of January 2002 in the combined markets of the USA, Canada, UK, Australia, Germany, Italy, Japan, China, Ireland, France and Spain, and number are expected to rise 47 per cent in 2004 to 152 million.¹⁰ These also comprise the heavyweight texters of the world, sending 3 billion text messages between them (as of January 2002) rising to a staggering 7.8 billion text messages within two years—a rise of 156 per cent.¹¹ The USA and Canada will be the highest growth markets, with China following closely behind. The European continent offers the best opportunities for the

exploration of effective marketing-based campaigns focused on established, technology-embedded youth user bases.¹²

In the United States, mobile phones have become essential accessories in middle school, and the trend has shown clearly upward movement. The most commonly cited statistics are from the Yankee Group, a Boston technology market research firm. An October 2000 survey of 3,500 households with mobile phones predicted that 35 per cent of teenagers would have mobile phones by the end of 2001.¹³ SpectraCom, an interactive online marketing company, in December 2001 found that 21 per cent of children aged 8 to 12, and 29 per cent of children aged 13 to 18 already had mobile phones.¹⁴

According to a follow-on 2002 survey by the Yankee Group, 34 per cent of youth in the United States aged 13 to 24 have mobile phones, compared to 50 per cent of the general population.¹⁵ Another source—Illinois-based Teenage Research Unlimited (TRU)—claimed that 38 per cent of teens nationwide had mobile phones in 2002, up from 25 per cent two years before; the average teen user two years ago was 16, compared now with 13 or 14 years of age.¹⁶ The Federal Communications Commission (FCC), in contrast, estimates that nationwide, 61 per cent of 18 to 24 year-olds carry mobile phones.¹⁷ "If one kid gets one phone or one type of service, he strongly influences behaviours," said Linda Barrabee, a senior analyst for the Yankee Group.¹⁸ All in all, the figures all point to the same fact. As Dan Schulman, chief executive officer of Virgin Mobile USA, put it: "I think we're all realizing the youth market is very large and a very rapidly growing market place".¹⁹ Accordingly, Virgin Mobile just launched a cellular service aimed at teens in the summer of 2002.

Youth spend up to 13.5 per cent of their disposable incomes on mobile products in developed markets.²⁰ In 2000, American teens spent USD 155 billion, or an average of USD 84 per week, according to TRU.²¹ By the end of the 2003, about 104 million young people (who represent 44 per cent of the total population in these markets) were spending about USD 11 billion just on short message service (SMS) applications alone (including mobile e-mail), according to a study undertaken by Wireless World Forum (W2F).²²

2.2 Market forecasts

The aforementioned 2000 Yankee study predicted that 68 per cent of youths and teenagers would have mobile phones by 2005—outstripping 62 per cent in adults—a higher percentage than any other age group.²³ Other contending forecasts cite that by 2006, youngsters are expected to outpace the rest of society 75 per cent versus 68 per cent.²⁴ Regardless of the exact percentage, forecast trends also appear undisputable. It is important to note that these impressive numbers are nevertheless still among the lowest of industrialized nations, especially when compared to, for example, Finland—where more than 90 per cent of teenagers and preteens (some as young as four years old) have mobile phones.²⁵

By 2006, the market of youngsters owning mobile phones is forecasted to comprise spending of somewhere between USD 17 and USD 20 billion.²⁶ The same study stated that penetration rate in 20 top adopter countries averaged at 44 per cent by the end of 2003, and would increase to 57 per cent in three years. Rosalie Nelson, director of the digital media research of Ovum Research Group, pointed out that youths would be the market most likely to be enthused about mobile entertainment.²⁷

2.3 The Impact of the Internet

Certainly, it would seem likely that exposure to one form of technology would lend to a strong predisposition and ability to use others. According to a UCLA study, Internet use is highest among those aged 35 and under, with especially high use among those 18 and under. The usage rate among the age 16 to 18 crowd was 97 per cent in 2002.²⁸ More than 2 million American children aged 6 to 17 have their own personal Web sites, according to a survey by Grunwald Associates, a media research and consulting firm in San Mateo, Calif. That figure represents 10 per cent of the 23 million youngsters who have Internet access from home today, a threefold increase since 2000.²⁹ Nearly 81 per cent of teens aged 12 to 17 use the Internet for e-mail, according to a survey by AOL, while almost as many—70 per cent—use it for instant messaging, which is expected to overtake e-mail as the most popular form of Internet communication by 2005.³⁰ A Pew Internet & American Life Project study concluded that of the approximately 13 million American teenagers who use the Net, 74 per cent use instant messaging; surprisingly, one-fifth of the teens using IM say it is their primary means of communicating with friends.³¹

Instant messaging habits begin early, right around age 10 or 11, say most experts. The biggest users are usually girls, "... who have reached a developmental stage when talking with friends and communication becomes so important," according to Amanda Lenhart, a research specialist with the Pew Internet and American Life Project, which, in 2001, did the first major study on the impact of instant messaging among teens. According to the survey, teens send instant messages at least several times a week and each session lasts at least a half-hour and involves three or more friends. Nearly one in five used the technology as the primary means of keeping in touch with friends -- and nearly four of ten teens said something in an instant message they wouldn't have said in person.³² It has become evident that the Internet helps teens build and maintain friendships; 48 per cent say the Net improves their current friendships, while 32 per cent say the Internet and instant messaging have helped them make new friends.³³ Studies have found that many of the most avid instant messages also are the most inclined to interact with their friends in person.³⁴

The stimulation of the wireless internet market appears also to depend on this consumer segment - and the viability of programs like Qualcomm's Brew in 2002 (a mobile phone interface allowing customers to download software applications ranging from games, to ring tones, to expense tracking) rests in the balance. The ability to download such applications - while not new in Asia and Europe - has been relatively new to the United States. Transforming a mobile phone into the equivalent of a Gameboy has been a main goal for those targeting the youth market, though this by no means implies that the handsets or services are reasonably priced. Certainly, Qualcomm is not alone. Nokia and a consortium of more than 15 companies, including wireless carriers AT&T, Cingular and NTT Docomo, as well as phone maker Motorola, are working on an open standard for wireless Internet applications.³⁵

2.4 Going completely wireless

An estimated 3 to 5 per cent of the United States' 144-million wireless subscribers, or up to 7.2 million phone customers, have cut out the home phone in 2003.³⁶ Michael King, an analyst with Gartner Group, a market research firm, said that two years ago, just 1 per cent of the US population had gone completely wireless; the rise to 3 per cent has been extremely notable, and some estimates put it as high as six per cent.³⁷ The Yankee Group on the other hand found that wireless phone minutes have already displaced 25 per cent of US wired phone minutes and predicted that share would increase to 35 per cent in 2004.³⁸ In a survey by Gallup in January 2002, out of 1012 people, 81 per cent of respondents said that their home (landline) phone was still considered their "main phone". Of the 18 per cent who considered their mobile phone to be their "main phone", about 54 per cent of them had had their mobile phone for two years or less. The real trendsetters are, predictably, teen-agers and college students, said Matt Woolsey, general manager for AT&T Wireless in San Diego. "The youth market is cutting the cord or never really establishing the cord," he said. Going wireless makes perfect sense for college students who change residences any number of times during their ostensibly four-year stint.³⁹

Few carriers that have targeted this segment are reaping its rewards: Cincinnati Bell Wireless (www.cbwireless.com), Leap Wireless (www.leapwireless.com) and Powertel (www.powertel.com) have all surfaced as early leaders in the youth space.⁴⁰ Leap Wireless, a San Diego mobile phone carrier is capitalizing on going wireless, and recently launched an ad campaign that asks: "Why have two phones, when one will do?" Leap's Cricket service offers unlimited, flat-rate local calling in some 40 US cities and has had tremendous success with customers who decide to go completely wireless, with some 26 per cent of its subscribers forgoing traditional home phone service. Harvey White, Leap's CEO, said his company's success in getting customers to cut the cord is due to its low rates, which are about USD 35 for unlimited local calling.⁴¹

2.5 Prepaid

At the end of 2002, there were 9.5 million prepaid phone customers out of 141 million total mobile-phone users in the United States, according to Gartner research. By the end of 2003, that number was expected to be closer to about 12 million prepaid customers out of 154 million total users. "Prepaid ... will likely stay less than 20 per cent in the long run just because carriers prefer customers to be on postpaid plans, and most customers are used to them."⁴² Prepaid for mobile phones appears to have a strong pull in the youth market, despite its stigma as an open door to high churn and unreliable revenue. Not only does prepaid give young consumers access to wireless service, it allows them to get extra minutes beyond the basic security plan their parents might pay for.⁴³

3 Mobile phone functionality and youth

3.1 Location tracking

The growth of location tracking technology via mobile phones has become increasingly prevalent. Parents—through services like ULocate.com and others—can now track their teenagers' whereabouts 24 hours a day through mobile phone SMS. Parents who are keen to keep tabs on their children can now be notified within about 30 seconds of their children's departure from a set radius from home or school. Only recent models of mobile phones are viable for these services, which calculate location based on reports from nearest base stations. These services only work when the phone is switched on.

3.2 Text messaging

The phenomenon of Short Message Service (SMS), which has been well known in Europe and Asia has begun to explode in North America. Several key indicators signify that messaging is gaining notable popularity among US subscribers; this is being accentuated among young adult users whose usage doubled from 22 per cent to 45 per cent in 2002.⁴⁴ In a positive sign that messaging is becoming an integral part of the mobile lifestyle, more than one in four (28 per cent) subscribers that utilize messaging services are frequent users (which equates to sending/receiving at least one message daily), and a full 38 per cent of young adults report frequent use.⁴⁵ Today, Britons send 52 million text messages each day, up from 24 million in December 2000, according to the Mobile Data Association.⁴⁶ Text messaging will continue to remain the most valuable and popular service for the youth market, expected to account for 85 per cent of youth spending on value added services in 2006.⁴⁷

"Text messaging is not about saying things," said Lindsay Notwell, director of segment marketing at Verizon Wireless Services. "It's the note-passing of the new millennium. It's the Game Boy of wireless communications, for people who think with their thumbs."⁴⁸ It is up for debate whether the United States will go as crazy for SMS as Europe, where teens spend greater portions of their time in public spaces and on mass transit. American teens "drive to and from school and work, reducing the amount of time they spend on hands-free commuting," according to a researcher for Euro RSCG Worldwide, a marketing communications agency.⁴⁹ From a global perspective, the youth market for these services will be worth USD 539 million in 2006, but only 43 per cent of this value will be outside of Asia Pacific.⁵⁰ Next to text messaging, ringtones are expected to be the largest youth mobile content market; spending will amount to USD 2.9 billion by 2006 with Japan, Korea, USA, Germany and the UK as the 5 largest markets.⁵¹

3.3 Phones with cameras

"Around the world, mobile phones that double as cameras sell faster than digital cameras. Nokia, the Finnish mobile phone manufacturer that holds nearly 35 per cent of the global market for mobile phones, announced recently all its phones will have cameras by 2004. Wireless industry analysts ARC Group say before this year is up more than 55 million people worldwide will own camera-phone handsets - more than double the figure for 2002. Now North American consumers and domestic cellular service providers - who routinely lag behind their European and Asian counterparts - are finally jumping aboard."⁵² Market researchers estimate that more than 55 million of them will be sold worldwide this year, up from about 18 million last year. Sales are booming in part because of substantial rebate offers, with many of the phones selling for USD 150 or less.⁵³ There is also significant concern that "cam" capabilities may encourage photojournalistic tendencies, particularly in young people who may turn their amateur "shutterbug" instincts into situations in which their safety is compromised. Capturing shots of natural disasters or crimes in action are examples.

3.4 Games

Asian markets provide a useful insight into the evolution of mobile data markets. Japan and Korea, two popularized success, particularly in the context of the Mobile Games market, together currently represent 64 per cent of the total value of the global mobile games market.⁵⁴ Significantly, Japan accounts for over half of the total international market. "The markets in Europe and the United States have yet to enter this period of maturation, at the end of which lies profitability on the basis of operational effectiveness..."⁵⁵ "... The United States, although a late starter will narrow the gap on the rest of the world in terms of mobile gamers

in the next five years. Despite Japan's current dominance this will be eclipsed by China and the US in 2006."⁵⁶ The demand for Mobile Java Games will be cyclical, and reliant upon "one-hit wonders"; long-term growth will come from the development of games that enable youth to engage in peer group interaction and communication rather than being purely based on "fun" and "entertainment" - youth spending on Mobile Java Games will account for USD 400 million by 2006.⁵⁷

4 International perspectives on the youth market

4.1 Japan

Any examination of the youth market and its usage of mobile telephones must pay special homage to the Japanese market, where phones in the youth market are especially well embedded. According to ITU indicators, 53.3 per cent of total telephone subscribers in Japan are mobile users; 81 million cellular phones are in use in the country that has a population of about 128 million people. Nearly 64 out of every 100 inhabitants uses a mobile phone. Mobile phones with enhanced functionality have hit Asian markets sooner than North America, and have not as yet surpassed purchases of regular digital cameras, possibly because capability for lower resolution images has been less desirable. More than 13 million camera mobile phones were sold in Japan alone in 2002.⁵⁸ In Asia you can pay the parking meter or buy a Pepsi from a vending machine - charging it to your mobile phone.⁵⁹ Young people in Japan use their phones very extensively for texting, playing games, talking, and accessorizing; the DoComo phenomenon was largely as a result of teenagers' interest. Spending in the market of new-generation devices with attached cameras and Java capability is currently dominated by Japan, which represents 67 per cent of the total market, elsewhere affordability of new devices and services will see this market increase from USD 68 million in 2003 to USD 494 million in 2006.⁶⁰ Overall, comfort with electronic and digital communications gadgetry is extremely well established in this saturated market, and social behavioral issue areas related to mobile telephone usage are concurrently far better articulated and dealt with in the policy realm than elsewhere around the world.⁶¹

4.2 China

Mainland China had 19 per cent of the world's telephone subscribers last year in 2002, compared with 9.6 per cent in 1998 - but figures show that penetration to total is still relatively low.⁶² ITU indicators show that nearly 207 million mobile phones are in use, and 49 per cent of total telephone subscribers are mobile users. The population of China in 2002 was approximately 1.3 billion; 33 out of every 100 inhabitants is a telephone subscriber, and 16 out of every 100 has a mobile phone. Yet while the market is undeniably large, there is some dispute about the figure of 500 million telephones. A significant sticking point is the mobile phone figure, which central government data, and many private sector analysts, put at about half of the overall figure, or 257 million users.

UBS Asia-Pacific technology strategist Sean Debow thinks 174 million is more accurate, or 83 million fewer users than the official figure. Analysts say that figure is based on the number of SIM cards in circulation, rather than individual users. And because the mainland does not operate a national pricing system, many users have multiple SIM cards to take advantage of cheaper regional deals, giving the impression that the market is larger than it really is. According to the Information Ministry survey, more than 75 per cent of mobile subscribers had changed their handsets at some point, while another survey showed that nearly 60 per cent of mobile phone subscribers were between 20 and 30.⁶³ This is indicative of the strong influence that younger generations have as early adopters.

4.3 Australia

ITU indicators show that Australia has about 12.6 million mobile cellular users, and 64 out of every 100 inhabitants carries one. They represent 54% of total telephone users in the country, which has a population of 20 million. Australian carrier Telstra and Coca-Cola have started trials whereby new vending machines allow customers to "Dial a Coke" on their mobiles with all charges debited to phone bills. Children in particular are being encouraged to use their mobile phones *de facto* credit cards for such purposes. The arrangements have alarmed authorities, who fear children, too young to manage the concept of credit, will fall heavily into debt. The Consumer Law Centre, Australian Consumer Association and State Government warned that allowing mobile phones to be used as credit cards was a recipe for financial disaster for young

people.⁶⁴ Up to a quarter of Australia's 14 million mobile phone users were children, but in many cases parents acted as guarantors; research shows a quarter of children aged six to 13 own mobiles, more than a third aged 10 to 13 have their own phone and about a third of mobile services are prepaid.⁶⁵ A recent poll by Roy Morgan Research found one in six Australian teenagers owned a mobile phone.⁶⁶

In Australia in particular, telecomms agencies are investigating ways to limit minors' access to pornographic mobile phone services when they become available in April 2004. The Australian Communications Authority is currently considering locking minors' mobile phones using PIN numbers or by classifications similar to those used in films to prevent access to raunchy premium-rate SMS or MMS services.⁶⁷

4.4 United Kingdom

In the UK, industry figures reveal primary schoolchildren are the fastest-growing market for mobile phones with more than 400'000 owning a handset. ITU indicators state that there are about 50 million mobile cellular users in the UK, representing nearly 60 per cent of the total telephone subscriber base. Eighty-four out of every 100 inhabitants has a cell phone, and the country has a total population of nearly 60 million. One in nine (11 per cent) children aged five to nine have a mobile phone, double the number two years ago and up from a mere 2 per cent three years ago. These figures have been compiled by MobileYouth, a consultancy which has embarked on research as the British Government has raised concerns about potential health risks of mobile use for youth. According to the research, mobile phone ownership among 10 to 14-year-olds has risen from 19 per cent to 33 per cent—the second fastest growth area by age group—with 2.7m users.⁶⁸ A separate British survey last year found nearly half of all children age 7 and 16 own a mobile phone; they send, on average, three text messages a day. The survey also found one in four youths age 11 to 19 has been threatened via their computers or mobile phones, including death threats.⁶⁹ The growth percentage comes very close to the average figures in this average age group in the United States. On current trends for the UK, projections indicate that more than 600'000 will own the phones by 2006, almost one in five of the age group.⁷⁰

According to MobileYouth's latest research, the youth mobile phone market will spend USD 1.98 billion on mobile data services this year, increasing to USD 2.43 billion in 2006. The figure for 2003 equates to 10.1 per cent of the total youth spending on leisure products and services being spent on mobile services such as text messaging, ringtones, picture messaging and mobile Java games. Elsewhere in the world, youth spending on mobile services will account for between nine per cent and 13 per cent of total spend. The UK text messaging market will continue to grow from USD 1.84 billion to USD 2.25 billion in 2006, a growth of 23 per cent over the three years. This compares with more than 2,600 per cent growth in the United States, where the market is still relatively underdeveloped in terms of handset penetration and interoperability.⁷¹

In Europe and the United States, an increase in the number of mobile phones that support polyphonic ringtone downloads will see the youth market for mobile data increase from USD 119 million to USD 990 million.⁷² In the UK, the market of new-generation devices with attached cameras and Java capability will grow from USD 2.1 million to over USD 25 million.⁷³

4.5 Italy

In Italy, according to ITU indicators there are over 53 million mobile cellular subscribers, representing about 94 out of every 100 inhabitants in the country, which has a population of a little over 56 million people. For every 100 inhabitants, there are more than 142 landline telephones; 66 per cent of total telephone subscribers are mobile phone users. An article about mobile phone usage in Italy states that Italian parents are rearing a generation of mobile "phone slaves", according to the conclusions of a study published last year.⁷⁴ A survey of children aged between nine and 10 found 56 per cent owned mobile phones. Of these: 68 per cent never switched the phones off; 80 per cent kept them on in church; and 86 per cent kept them on during lessons.⁷⁵ The rate of subscriptions in Italy is forecast to top 90 per cent of the population this year - one of the highest in the world. "... In four out of every 10 cases, the mobile had been given to the child by his or her parents and that more than 40 per cent of calls were made to either the mother or father."⁷⁶ The study found that, among the children they interviewed who did not own mobiles, 100 per cent wanted one.⁷⁷

5 Observable phenomena

While it is hard to believe that teenagers may want to take on responsibilities, it is not a surprise that they seek to emulate adult behaviors. A recent study shows that increasing use of mobile phones may, in part, be due to the willingness of teenagers to represent an image of maturity and adulthood. Among numerous teenagers surveyed by Teenage Research Unlimited as to whether they rated mobile phones are popular or unpopular, “87 per cent say wireless is “in”.”⁷⁸ A variety of observable phenomena have surfaced around the realities of mobile phone usage – both as a byproduct of it, and as a reaction to it—that are very specifically related to the obvious characteristics of the youth market.

5.1 Moblogging

There is good reason to believe that young people have been very active in the rise of “moblogs”—or mobile Web logs—a recent technological trend.⁷⁹ Moblogs consist of online journals that are based on photos taken by cam phones and directly uploaded to web pages. “The cost varies to upload a photo to a Web site or to e-mail it to another cam phone. Some phone plans charge by the amount of data sent over the network. The more photos uploaded, the bigger the monthly bill.”⁸⁰ For example, Cingular charges USD 2.99 a month to transmit up to 20 photos, and 25 cents for each additional photo. Other plans offer unlimited photo messaging for a set monthly fee. Verizon Wireless, for instance, charges USD 4.99 a month for unlimited photo messaging.⁸¹ This is perfectly indicative of the kinds of innovation that young people are apt to encourage.

5.2 Parental supervision

In the aforementioned 2002 Yankee Group US national survey, 30 per cent of mobile phone users said they had at least one child under age 18 who had a mobile phone, an increase from 5 per cent in 2000; nearly 70 per cent said they paid their children's mobile phone bill.⁸² Ten per cent of youths under the age of 18 purchased their own mobile phone, and nearly 20 per cent paid for service themselves.⁸³ The growth in youth sales poses a clearly identifiable potential problem, since younger members of a population represent a credit risk to the carriers. For example, figures released by the NSW Office of Fair Trading in Australia last month revealed teenagers under 18 had an average debt of USD 3'390, mostly from mobile phones and credit cards; they also revealed that teens as young as 16 were in debt.⁸⁴

A recent Maritz poll reveals that adults who own mobile phones believe it's “OK” for youths, ages 12 to 16, to also have their own wireless telephones.⁸⁵ Yankee Group research found that nearly 60 per cent of parents listed their primary reason for giving their child or teenager a mobile phone as “security and emergency purposes”.⁸⁶ Focus groups and in-depth interviews have shown that parents who know they will be able to contact their children often allow them to venture farther away than would otherwise be permitted. “The ironic and often unintended consequence of the desire to increase the safety of the teens is they are actually allowed to take greater risks,” said James Katz, a professor of communications at Rutgers University. “The mobile phone is like an anesthetic, reducing parents' concerns. Meanwhile, it allows the teen to go out and have a lot more fun and get into a lot more trouble.”⁸⁷ Verizon Wireless traditionally saw this market as one controlled by parents, but which has recently shifted to market to those falling in the 16-20 year old age bracket. “Late teens — over 18 and in college — have developed incredible amounts of discretionary income,” according to a Verizon spokesperson; “We're marketing to 16 and above, because we've recognized that those people influence their parents.”⁸⁸

5.3 School policies

“It's pretty much the same across the country,” said a spokeswoman for the American Association of School Administrators, based in Arlington, Virginia. An informal survey of administrators after the attacks of Sept. 11 found that many officials were rethinking bans on phones that had been in place since the 1980s. The reason: Parents wanted the peace of mind that comes with having their children immediately reachable.⁸⁹

While there are no statistics that track school mobile phone policy, education officials suggest most districts do not permit them.⁹⁰ In terms of policy toward mobile phone usage in schools, it is by and large the case that most schools engage in a zero-tolerance policy regarding phone usage on campus. Despite a brief period of relaxation of rules in the wake of the Columbine High School and 11 September tragedies in the United States, the majority of primary and secondary educational institutions have stiffened their resolve to prevent

students from using devices—including beepers—to traffic drugs or circumvent school security. Certainly this is not the only place where restriction to mobile phone usage is common. Entertainment and concert venues will often ask audience members to turn off mobile phones before a show begins, as will airlines pre-flight.

On a slightly different note, universities have also been facing adjustments to the new mobile trends. Years ago, they could make good money serving as small phone companies, according to Sherry Manning, director and CEO of Educational Communications and Consortia Inc., a national university telephone billing service.⁹¹ Universities could become wholesalers, charging slightly more than they paid for service, but less than local carriers. “For the University of California at Santa Barbara, student telephone billing has fallen by USD 500’000 in the past two years. Chico State had a drop of USD 400’000 in the past year. At the University of Rhode Island, billing has dropped from about USD 800’000 a year five years ago to just USD 100’000.”⁹²

5.4 Social trends

The various transformations of certain traditional forms of social behavior among children and teenagers is remarkable. It is also not always positive. There have been reports on the increase of bullying through the transmission of nasty text messages, and they have been significant enough to garner attention from the press in Canada. “It’s a growing problem,” says Gary Shaddock, president of the Canadian School Board Association and a trustee in southwest Saskatchewan. “It’s moving from the face-to-face bullying to bullying through technology. In some ways, it’s easier for the perpetrators because they don’t have to do it face to face.”⁹³ Mobile phones are providing a window through which information - that might otherwise not be transmitted - is flowing freely. Understanding that “kids will be kids” is an important part of thinking about the impact of mobile phones on youth; the same prevailing issues and problems will persist, and for most parents it is largely a matter of being able to envisage and address the technological form that they will assume.

5.5 Addiction therapy

The pervasiveness of the impact of mobile technology on our society is supported by evidence of addiction as well. The Priory Clinic, a well-known behavioral clinic in Britain is treating 55 patients for addiction to SMS and compulsive checking of their mobile phones for messages. All except six of those addicted to using the SMS are under 16 years of age, sent for treatment at the clinic by worried parents, who have seen their children spending up to seven hours a day texting. It is feared that that compulsive texting syndrome, a so-called new-technology addiction, would become much more serious, particularly among school-age boys and girls.⁹⁴

5.6 Mobile phones vs. smoking

Industry studies show that the vast majority of teenagers who carry mobile phones talk to their parents daily using their mobile phones, though most primarily use the phones as a lifeline to their friends. One study hypothesizes that over the past few years in the United Kingdom, the percentage of teens that smoke has dropped, while the rate of mobile phone users among teenagers has risen. And thus, a speculative correlation has become hypothesized and popularized, claiming that mobile phones are a substitute for the habits, such as smoking, that facilitate peer bonding and attempting to behave in adult fashion. Ian Irvine, a professor of Economics at Concordia University, goes so far as to suggest that mobile phone usage among teenagers has actually forged a level of peer group contact that has circumvented the peer pressures for young teen smoking.⁹⁵ Other more pragmatic observers believe that teenagers are chatting more and smoking less because their money is being used to pay the bills for their mobile phones.⁹⁶ The implications of this observation could truly affect teenage smoking in the United States, where currently 19 per cent of males and 27 per cent of females smoke regularly. Slightly over a third of teenagers also already own a mobile phone. An anti-smoking campaign could very well change the balance between teenage smokers and non-smokers.⁹⁷

Doreen McIntyre, chief executive of England’s annual No Smoking Day, was more succinct: “For years so-called health experts like me have searched in vain for that elusive something that could compete with the thrill, mystique and glamour that children see in smoking. How wonderful to learn that, true to form, children seem to have found the answer for themselves. Mobile phones are grown-up, glamorous and costly; they seem to offer something to do when you are bored or alone, and a way to keep your social life going. They

even have the added benefit of annoying other people, and an element of health risk, and certainly seem to be addictive - perfect!"⁹⁸ Unfortunately, the experience in Britain does not appear to be duplicated in other countries. Educators and public officials from Australia, Italy and Switzerland have responded that although mobile-phone use clearly is up, teenage smoking rates are either stable or are increasing as well.⁹⁹

6 Survey results

This survey was undertaken as part of a study of mobile technology and youth, and was designed to independently explore the relationships between gender, age, behavioral trends and mobile phone usage patterns of teenagers and young people. The sample of survey respondents consisted of 189 teenagers and young adults across a spectrum of socioeconomic, cultural and ethnic backgrounds in the area of Boston, Massachusetts. All respondents were students in high school, college, or graduate school; questionnaires were distributed at the Rindge Latin High School in Cambridge, Ma., as well as to undergraduate students at Tufts University, and graduate students at the Fletcher School (both located in Medford, Ma.) Of the total survey respondents, 44 did not specify their gender, and therefore were dropped from the survey analysis. Of the remaining 145, 52 per cent of respondents were male, and 48 per cent were female – a small difference that makes no significant impact on the results of the study.

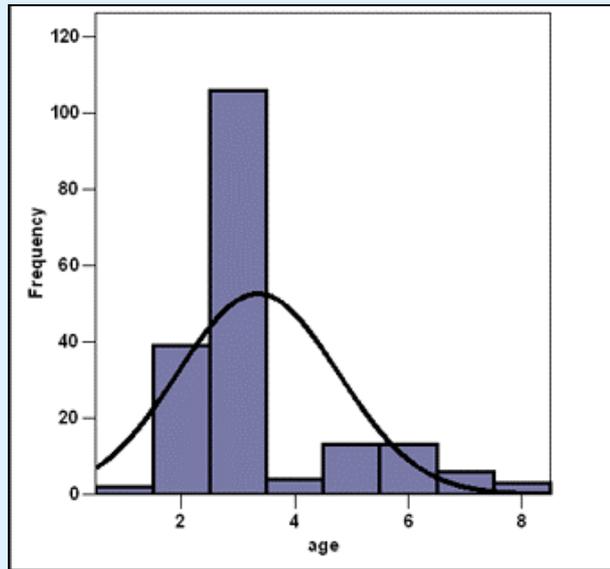
While this survey does not represent a completely unbiased sample of youth population in North America as a whole, it is possible to glean certain trends and facts from the study as fairly representative of the experience of young people specific to educational contexts/settings. Arguably, it is this class of educated young people—with the promise of above average earning capacity—that comprises the target market for mobile carriers, the “big spenders” of tomorrow.

A wide variety of subjects were included in the survey, including whether each respondent owned a mobile phone, whether they could live without one (if they already owned one), their age of initial use, the percentage of calls directed toward their family, responsibility for the telephone bill, their perceptions of medical side effects, of privacy implications, and of their habits (both in terms of mobile phone functionality and their social behavior). While not all of the questions in the survey yielded interesting and reportable outcomes, enough emerged by way of ownership and usage patterns that a coherent picture of youth preferences could begin to be constructed. Likewise, while the abnormal (bi-modal) distribution of the age groups in this survey reflects a heavy skew toward the 18-20 year old age bracket (see Figures 3 and 4), this does not prevent us from drawing upon and learning from some of the statistically significant results and relationships that were revealed.

Figure 3: Age distribution of survey sample

Age Bracket	Percentage
12-14	1%
15-17	21%
18-20	57%
21-23	2%
24-26	7%
27-29	7%
30-32	3%
33+	2%

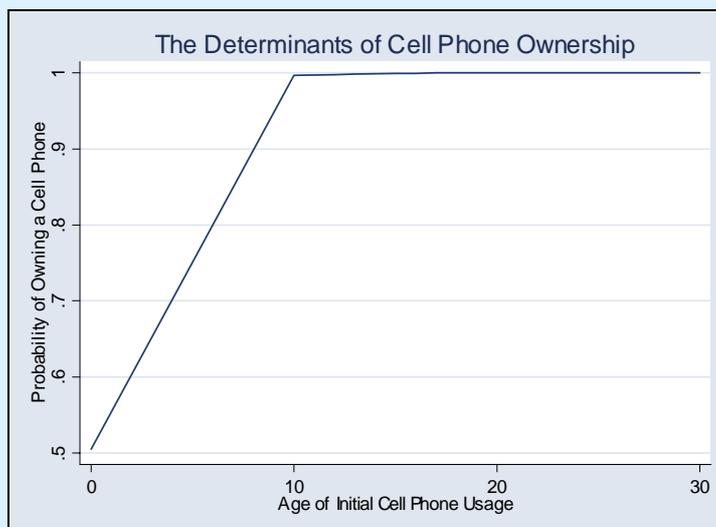
Figure 4: Histogram of age distribution ((Bi-modal) Abnormal distribution)



6.1 Mobile phone ownership

The first notable point of interest to emerge from this study concerns the determinants of mobile phone ownership. In Figure 5, it is evident that based on this survey sample and the relationship between mobile phone ownership and initial age of mobile phone usage, the probability of owning a mobile phone tends toward 100 per cent (or 1) when the age of initial use is between 11 and 15 years of age. A logistic regression was run, and the model created enjoys a considerable explanatory power – predicting 93 per cent of all cases of mobile phone ownership correctly. Beyond the initial adoption age of about 11 years old, the model perfectly predicts mobile phone usage, which means that those who adopt this technology at a young age are highly likely to continue doing so.

Figure 5: Determinants of mobile phone ownership



Note: P=0.007

Further analysis yielded that for those falling in age brackets higher than 18-20 years old, initial age of mobile phone usage makes less of a difference to the probability of current usage. There was also significant association between the responses of those who fell into each of the age brackets 2 (15-17 years old), 3 (18-20 years old), 5 (24-26 years old) and 6 (27-29 years old), and those who fell outside them in their responses to this question about initial age of usage.

Figure 6: Age of initial mobile phone usage

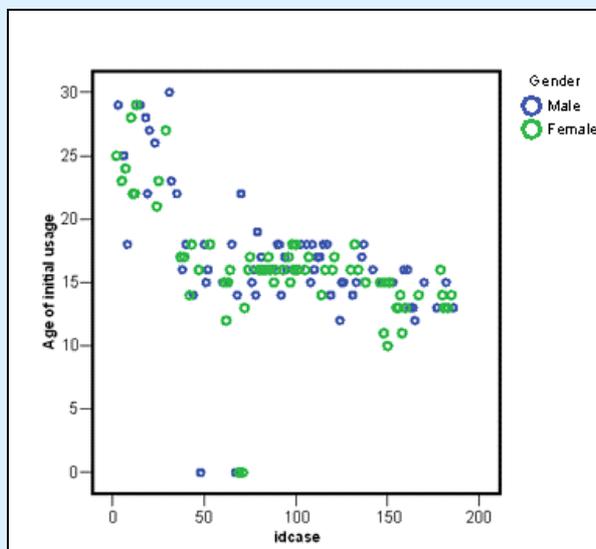
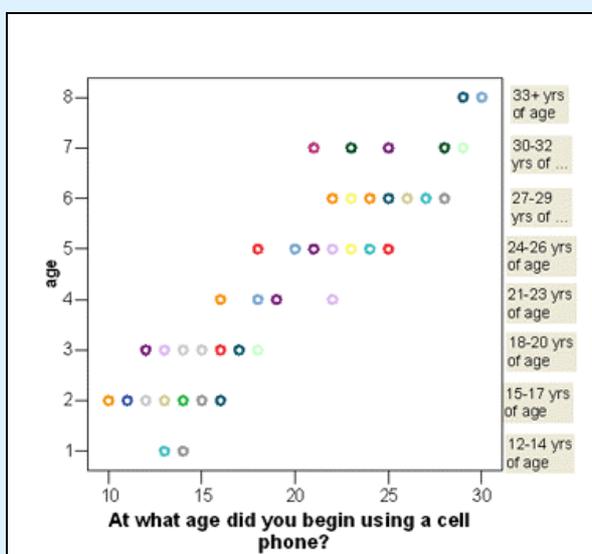


Figure 6 illustrates a scatter plot of the respondents' ages of initial usage in the sample; the majority clearly fall into the "under twenty" category. Figure 7 conveys the age range associated with initial mobile phone usage by age bracket, and the bulk of the respondents in this survey first used a mobile phone also under the age of twenty. It is possible that respondents in the oldest age brackets have been more recent adopters, while those in younger brackets have had a longer history of exposure, no doubt spurred by their parents' decisions to put a mobile phone in their hand. In any case, what is apparent here is that the mobile phone boom of the last six years has left few segments of the youth market out.

Figure 7: Comparison of initial age of adoption by age bracket

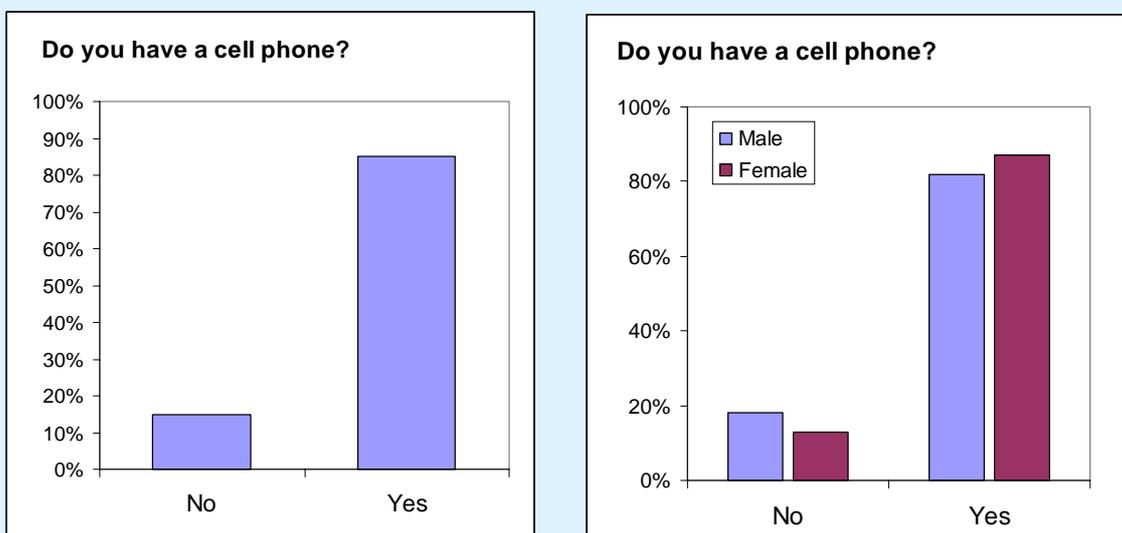


One good way of further developing this analysis, beyond merely reporting descriptive results, includes checking for levels of statistical “association” (See Table 1) between variables. While this is not synonymous with inferences of causality, it indicates that the responses to certain questions by gender or by particular age group—relative to other age brackets—are significant.¹⁰⁰ Some of these associations will be explored in greater detail in forthcoming pages.

6.2 Mobile phone usage

The results reflected in this survey are not completely on par with nationwide average estimates of teenager mobile phone usage patterns. Eighty-seven per cent of those teenagers and young adults surveyed here had mobile phones, perhaps in part a reflection of the bias of surveying on college and school campuses (see Figures 8a and 8b). Eighty-nine per cent of females had mobiles, as did 83 per cent of males; the difference between these two percentages is insignificant and largely echoes a broader consistency that appears between the genders throughout the study.

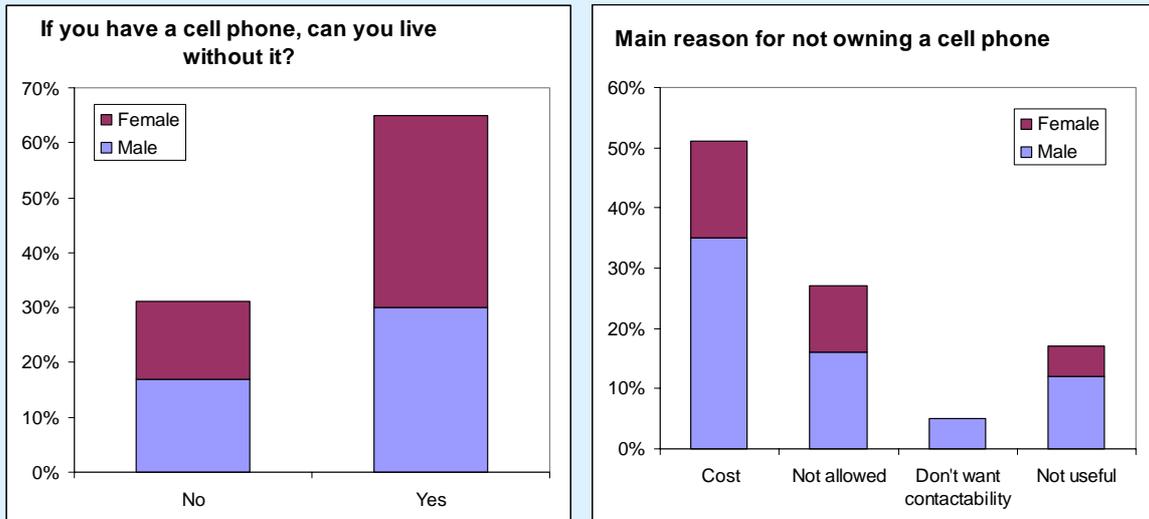
Figure 8a & 8b: Mobile phone ownership



For those who did not profess to own a mobile phone, the main reasons for this emerged as follows (See Figure 9a); likewise, for those who do own one, the question of whether they could live without one was presented (See Figure 9b). For the sake of comparison, it is interesting to note that in a Pew “Internet and American Life Project” telephone survey of 1,677 people in November 2003, 38 per cent said it would be “very hard” to give up their mobile phone, 27 per cent said “somewhat hard”, 12 per cent said “not too hard”, and 21 per cent said “not at all hard”. The remainder either did not use or have a mobile phone.

In Figure 9a, only males indicated that they did not want to be contactable, and a larger number of males also cited cost as a reason for not owning a mobile phone. Cost was overall the most frequently cited reason for no mobile phone ownership. In the corresponding bar graph, more than 60 per cent of the young people surveyed said that they could live without a mobile phone. This could be true, but in light of the impact that initial age of usage has on the probability of mobile phone usage later on (see Figure 5), it could also be a sign of the extent to which young people are unaware of the dependencies they have developed. In neither case did the response differences between genders or age bracket present grounds upon which statistically significant conclusions could be drawn about either.

Figure 9a & 9b: Reasons for not owning a mobile phone, and living without one



6.3 Mobile phone calling patterns

In terms of calling patterns, it is evident that the difference in responses between males and females to the question, “How much of your mobile phone usage is directed toward family calls only?” was significant, prior to applying the stringency of the Bonferroni method. Females tend to direct greater numbers of their calls to their family, although all in all the vast majority of teenagers spend only a quarter of their time calling home (see Figure 10). Surprisingly, in Figure 11 it appears that some of the younger (under twenty) respondents in this survey call their families somewhat less than their older counterparts; in any case, statistically significant association is only evident in age bracket 3 (18-20 years old) and age bracket 6 (27-29 years old).

Figure 10: Count of calls directed toward family

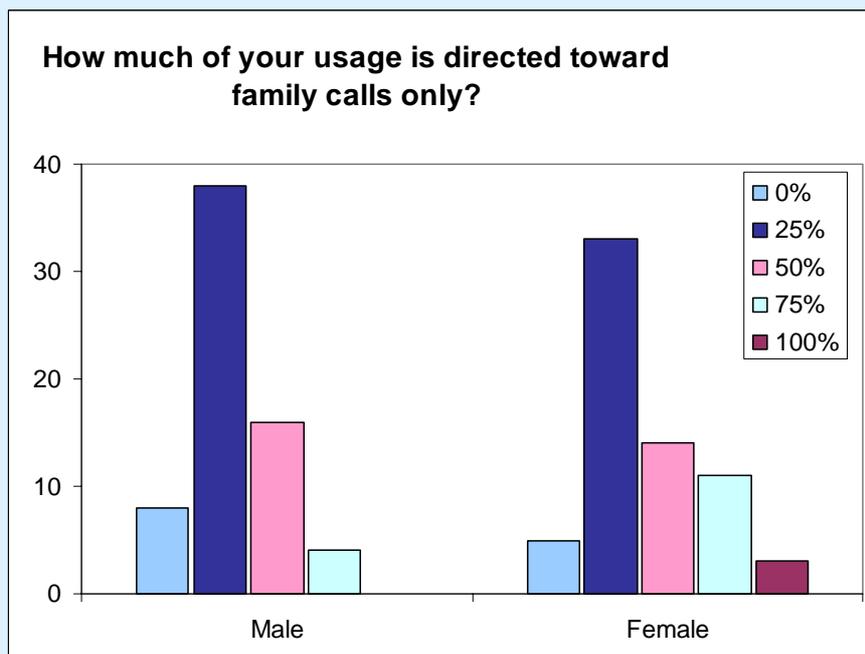
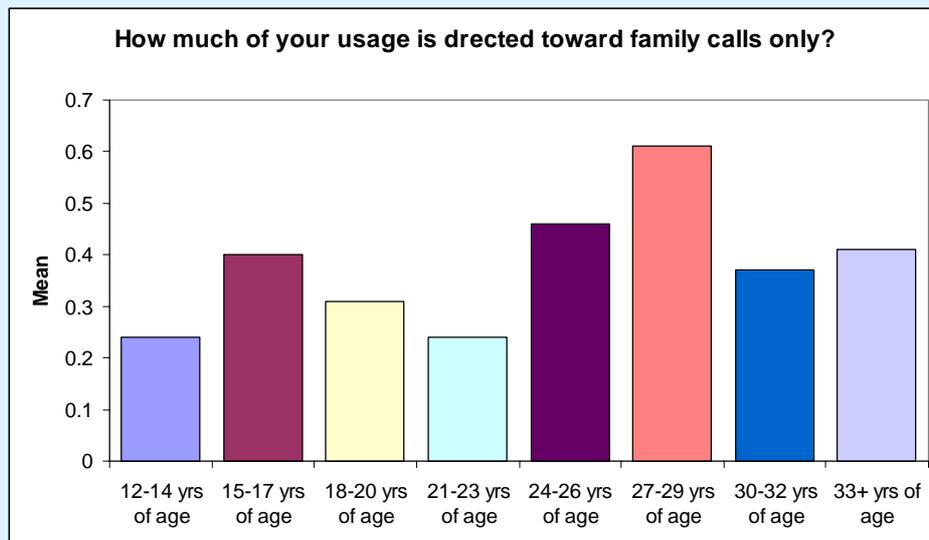
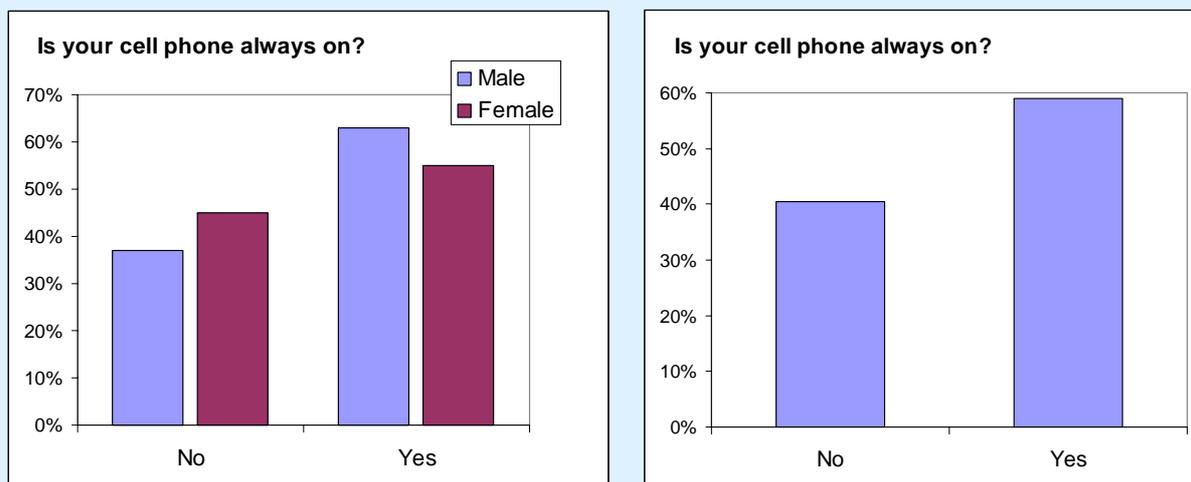


Figure 11: Calls toward family by age bracket



In response to the question “Is your mobile phone always on?” (see Figure 12), respondents indicated that more often than not, their phones were indeed on. However, the divergence in answers was not a significant one either way for gender or for age. The possible intuitive link between the likelihood of keeping a mobile phone on at all times, and the level of comfort and habit that come from having adopted use of one at an early age could be considered—but is only weakly supported in the statistical analysis with a Pearson correlation of .197.

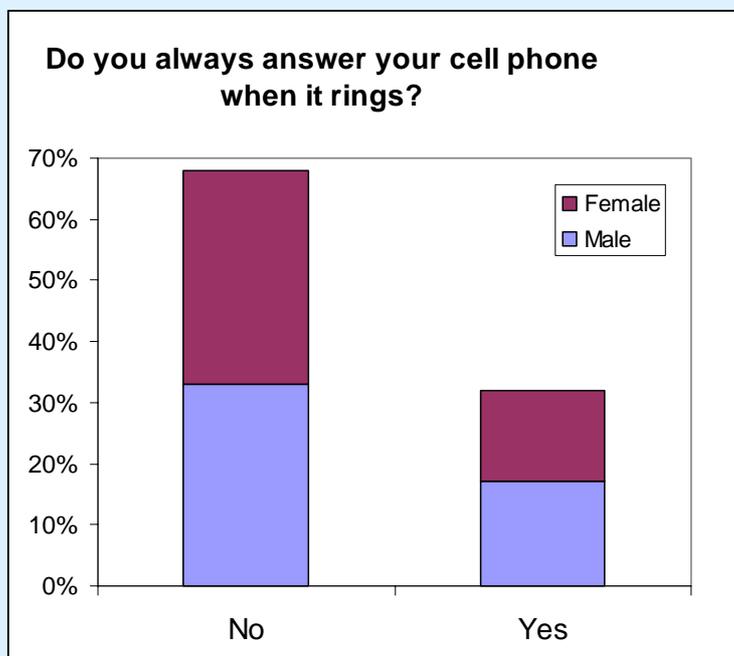
Figure 12a & 12b: Is your mobile phone always on?



The majority of young people—like their older counterparts—like to have some control over their level of accessibility. This type of control can be achieved easily by circumventing the controlling tendencies of protective parents—and simply switching the device off, or avoiding calls when “caller-id” signals an unwanted name. According to Figure 13, it is apparent that more than 60 per cent of young people do not always answer their phone when it rings (thereby lending considerable to the importance to basic call screening functionality), and neither gender nor age have a particular impact. There is a slight negative correlation between those who always answer their mobile phone when it rings, and those who are bothered

when others around them talk on their mobile phones; this confirms a rather intuitive assumption that those who practice discretion with their handsets are most likely to appreciate the same in others. Gender, in particular, appears to fall rather evenly across the divide for both “yes” and “no” answers.

Figure 13: Do you always answer your mobile phone when it rings?



6.4 Mobile phone protocol and public spaces

It appears that young people are almost as rarely consistently disturbed by a sense of public intrusion of mobile phones as their older counterparts (see Figure 14). A Pew “Internet and American Life Project” telephone survey in October 2003 asked 2,200 people the extent to which mobile phones in public spaces were an intrusion. Twelve per cent considered them to be a “very big intrusion”, 20 per cent said they considered them a “big intrusion”, 30 per cent called them a “small intrusion”, 35 per cent said they were “no intrusion at all”, and 3 per cent either could not answer based on their experience, did not know, or refused to answer.

Juxtaposing the parameters of that survey with this study yields similar findings, assuming that “seldom and sometimes” can be interpreted as reasonably equivalent to “small intrusions”. Most people are not bothered by reasonable mobile phone usage in public areas, in part perhaps because of their own usage habits. This is not to say that there are not many people who would find overpoweringly loud voices a serious annoyance and a “faux-pas” in the world of mobile phone protocol. But it is likely that increased awareness (and signage, in particular) about appropriate protocol in public places (in libraries, movie theatres, and places of worship) is actually having its own self-regulating effect in society, whereby most people are growing more consciously aware of being considerate of their fellow citizens.

Figure 14: Does it bother you when others around you talk on their mobile phones?

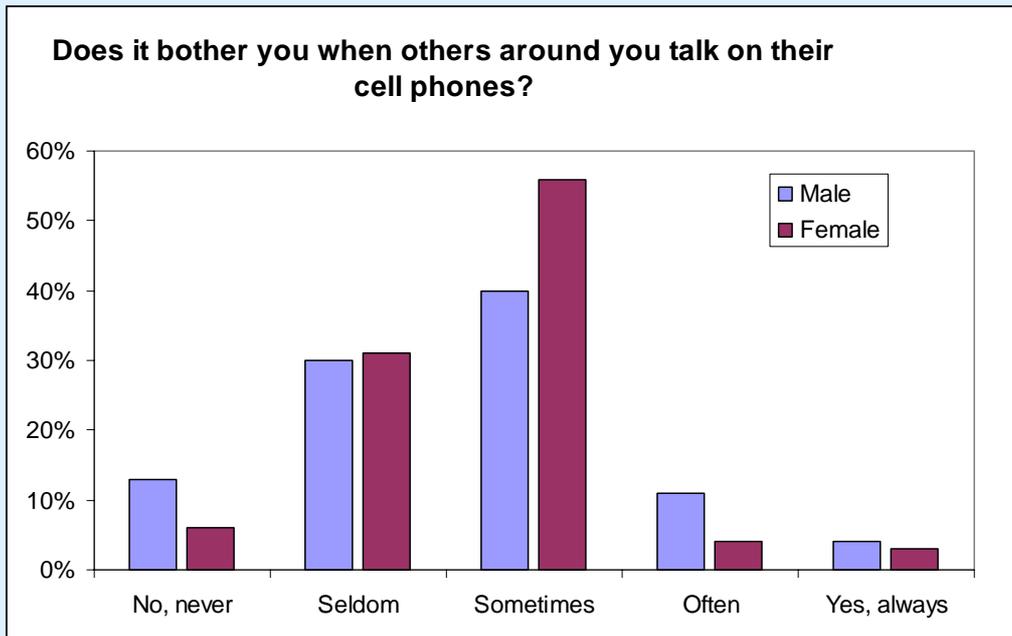
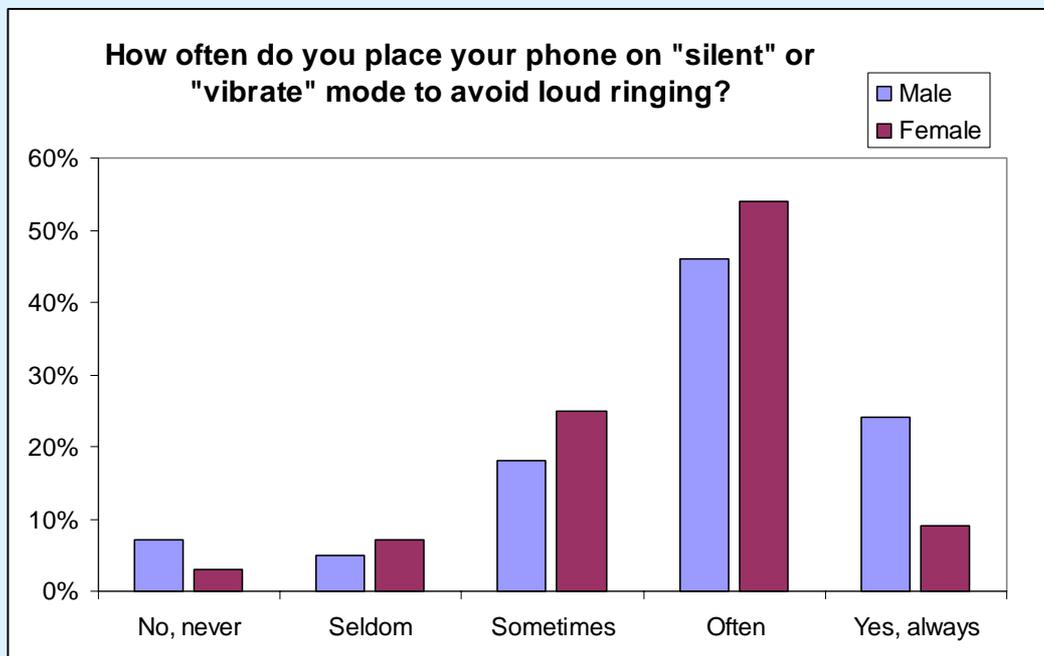


Figure 15: How often do you place your phone on "silent" or "vibrate" mode?

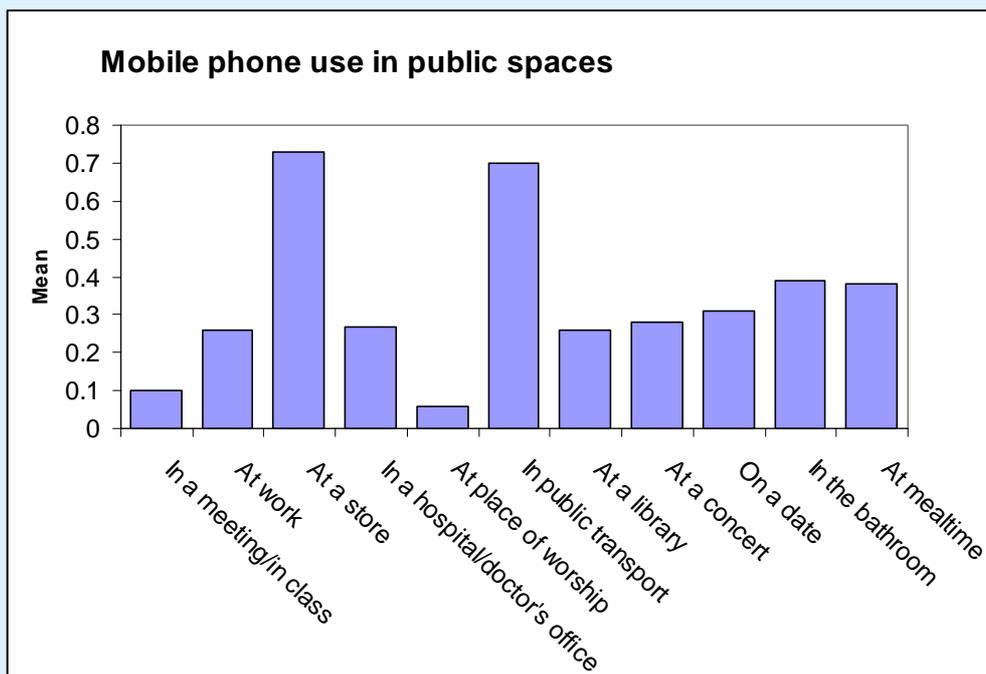


Exploring the full functionality of a mobile phone contributes a great deal to controlling the potential levels of public disturbance that these devices can create, and part of this comes from utilizing the "silent" or "vibrate" modes for ringing phones. An average of about half of the male and females in this survey profess to using these features "often", while nearly the remaining half use them "sometimes" or "always" (see Figure 15). It is thus possible to surmise that those growing up with mobile phones have a well-developed

sense of what is/is not appropriate. To that end, there is a slight positive correlation between those who are bothered when others around talk on their mobile phones, and those who exercise these features to avoid loud ringing. However, it is also important to bear in mind that these survey respondents are all students, and that requisite time spent in a classroom would by default predispose them to having to use these features on a very regular basis.

One of the most interesting questions in this survey deals with identifying the spaces in which mobile usage among young people is most prevalent. Of the range of possibilities presented, the two most popular places by far for using a mobile phone are “at a store” and “in public transport” (see Figure 16). There was little significant difference between genders to this question, and these averages hold true across the board. For age brackets 2 (15-17 year old group) and especially 3 (the 18-20 year old group), their selection of common spaces for mobile phone usage was significant (post-Bonferroni method). The responses of the 18-20 group in every area except places of worship and libraries indicated a significant association. It is also evident that those respondents with *both* parents using mobile phones (as opposed to those who have only one, or neither) have significant association with mobile phone use in stores, in doctor’s offices, in public transport, at concerts, and at mealtimes. Few young people (thankfully) indicated using phones in classrooms or places of worship, mostly likely due to the overt restrictions in these spaces; responses in the other areas did not yield extraordinary findings, although a surprising number of young people use phones whilst on dates, in the bathroom, and at mealtimes, all of which are generally considered to be rather impolite.

Figure 16: Mobile phone usage in public spaces

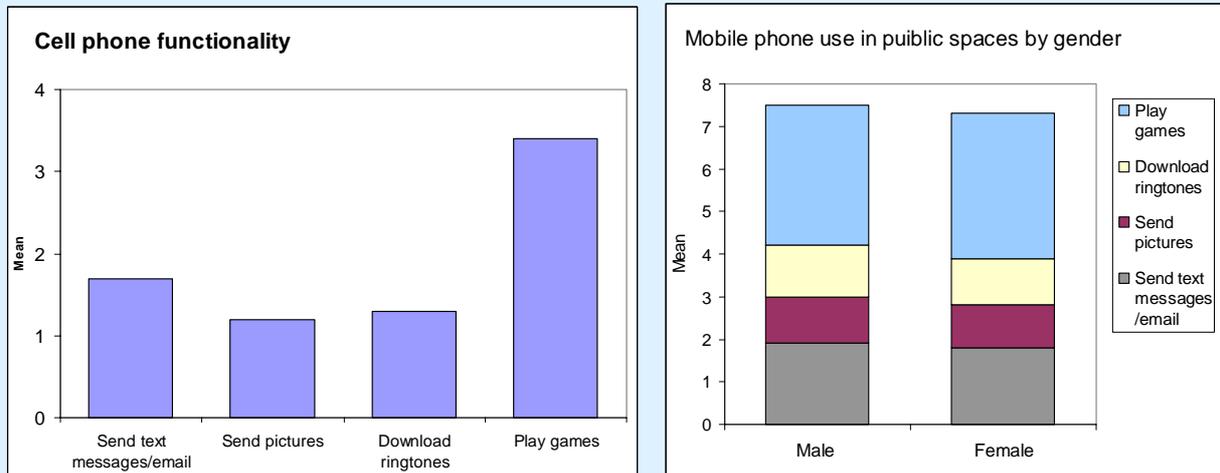


6.5 Mobile phone functionality and calling minutes

Through a series of questions about the extent to which survey respondents explore the full functionality of the mobile phones (sending SMS, sending pictures, downloading ringtones, playing games), it is apparent that the majority of people in this survey sample use their phones to play games (see Figure 17a). There appears also to be a faint positive statistical correlation between those who play games relative to their initial age of mobile phone usage. Sending text messages comes in at a distant second, and sending pictures and downloading images both appear to happen less often. There is however strong positive (structural) correlation between downloading ringtones, sending pictures, and sending text messages, although

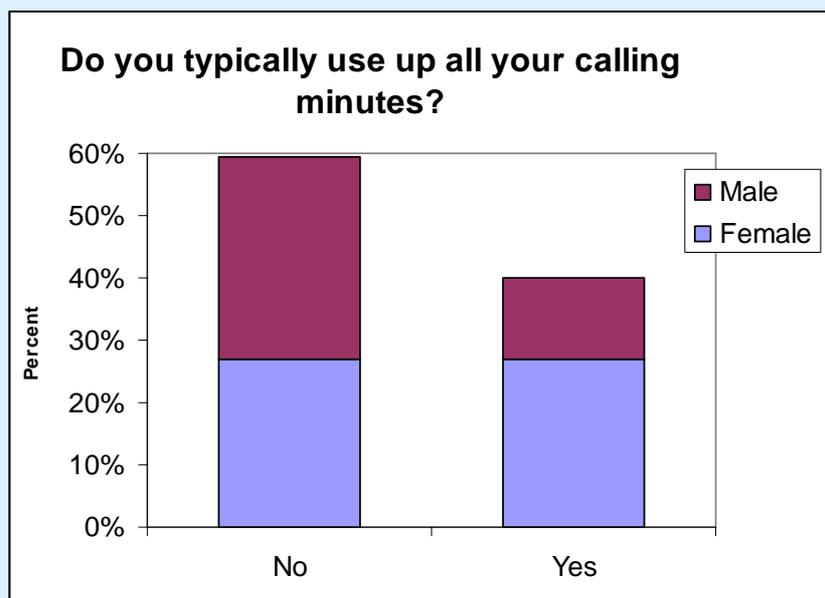
correlation becomes haphazard when looking at the relationship between downloading ringtones and playing games. It appears therefore that these two activities in this sample are somewhat incongruent. While gender had no real significance in the response patterns to these questions (See Figure 17b), the age brackets—particularly 2 (15-17 years old) and 3 (18-20 years old)—do appear to have some significant association with the trends (specifically, sending pictures and playing games) displayed below.

Figure 17a & 17b: How often do you use your mobile phone to...?



Moreover, most of the survey respondents indicated that they did not (on a regular basis) use up all calling minutes offered to them as part of their mobile phone plans. Females tend to use up their “minutes” more often or quickly than men, and the significance of this disparity between the genders is meaningful. (See Figure 18) This is not an uncommon assertion to make, as it is a common stereotype that females spend longer periods of time talking on the telephone.

Figure 18: Usage of mobile phone minutes

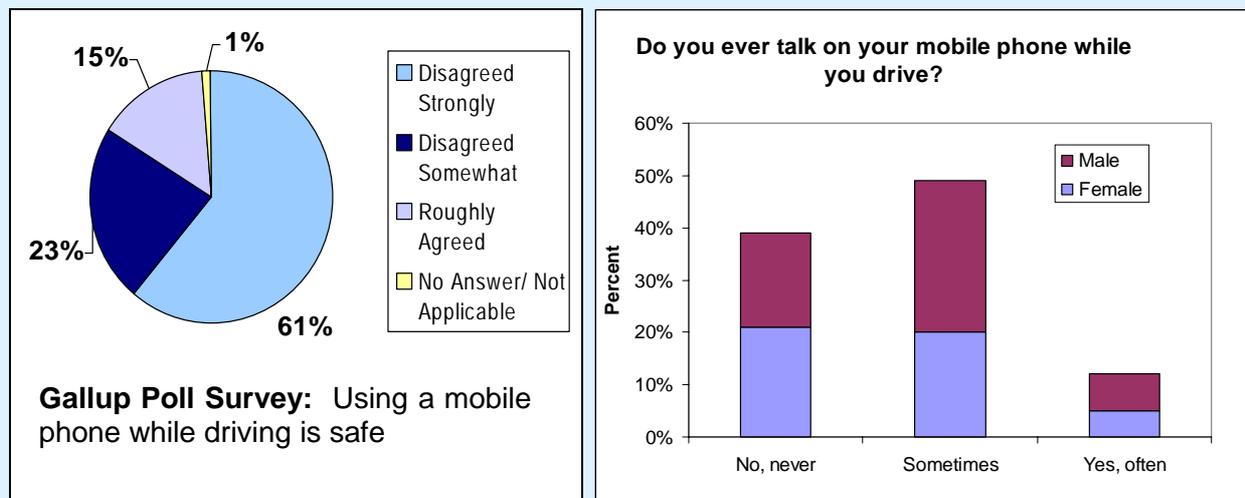


6.6 Mobile phones and driving

The question of whether one can/should use a mobile phone while driving is one that in many places in the world has been solved by the law. Among others, Brazil, Israel, Italy, Japan, Spain, Switzerland and United Kingdom all have restrictions on mobile phone use while driving. An estimated 44 per cent of all US motorists have a mobile phone in the vehicle.¹⁰¹ As of 2003, New York was the only state with laws punishing those who drive while talking on a handheld mobile phone. Thirty states, though, have legislation pending.¹⁰²

Meantime, various studies and survey have been undertaken in an effort to determine the validity of such legislation. A study of Canadian drivers with mobile phones found that “the risk of a collision when using a cellular telephone was four times higher than the risk when a cellular telephone was not being used.”¹⁰³ Research from the University of Utah also revealed a potentially lethal “tunnel vision” that drivers get while talking on a mobile phone; drivers using mobile phones, even with hands-free devices, do not process peripheral vision well.¹⁰⁴ According to a Gallup Poll Survey in November 2003, 1004 adults were asked whether they agreed with the statement that “using a mobile phone while driving is safe”. (See Figure 19a) The majority disagreed strongly, 23 per cent disagreed somewhat, and only about 15 per cent roughly agreed. Compared to adult respondents, teenagers and young people appear to be slightly more relaxed about “sometimes” using a mobile phone while driving (see Figure 19b). A similar range (12-15 per cent) of young people and adults find driving while talking to be safe, although the range of those who find it “never safe” or who “disagreed strongly” with the Gallup statement was about 20 per cent higher in adults.

Figure 19a & 19b: Do you ever talk on your mobile phone while you drive?

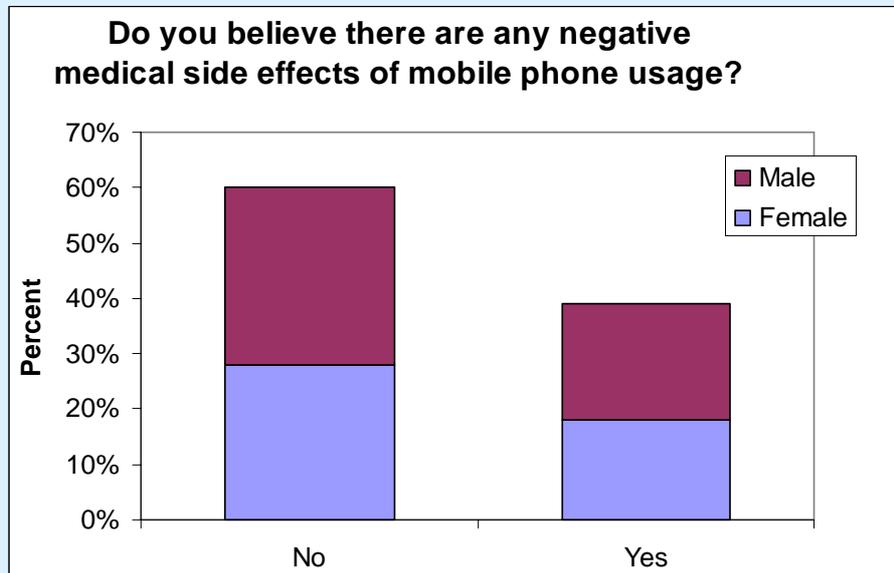


6.7 Mobile phones and medical side effects

The question of whether mobile phone usage can actually lead to negative medical side effects is one that remains unanswered. The World Health Organization (WHO) states: “Present scientific information does not indicate the need for any special precautions for use of mobile phone. If individuals are concerned, they might choose to limit their own children's radio frequency exposure by limiting the length of calls, or use “hands-free” devices to keep mobile phones away from the head and body.”¹⁰⁵ To the extent that public information about this issue can guide general perceptions and decision making (irrespective of what is or is not proven medically), the information gleaned from the survey as well as from other well known public sources is important. According to a Gallup Survey in March 2000, out of 999 people, only 14 per cent had

heard a “great deal” about possible health risks due to mobile phones. 37 per cent had heard a “moderate amount”, 31 per cent had heard only “a little”, and 18 per cent had heard “nothing at all”.

Figure 20: Medical side effects

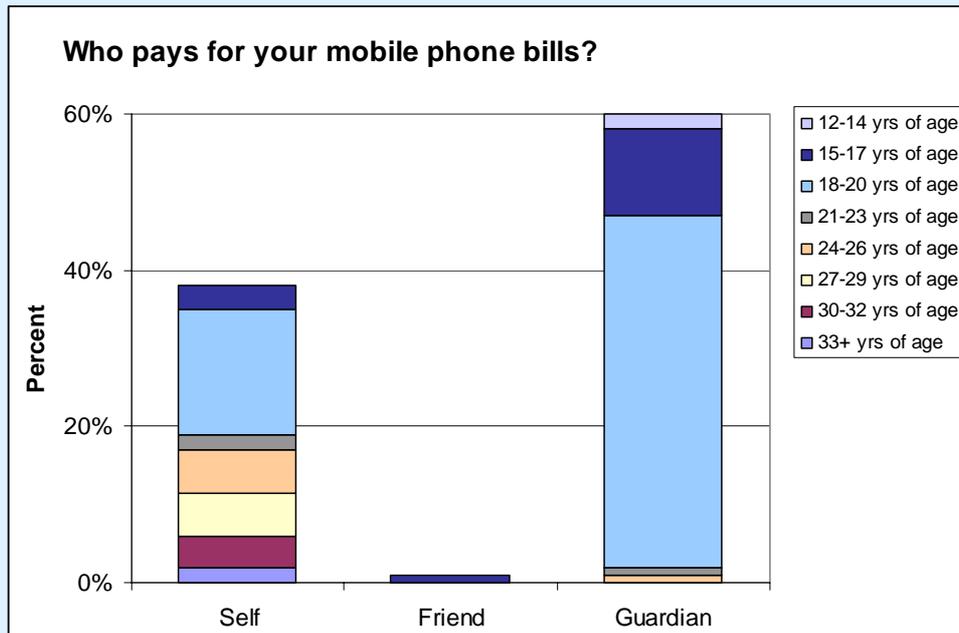


In Figure 20, it appears that the majority of young people in the survey sample do not believe that using mobile phones have any negative medical side-effects, although for those who did answer “yes” to this question, there was surprising uniformity in the words with which they chose to elaborate in their examples. Reference to “radiation” and “brain cancer/tumors” featured prominently – therefore despite what appears to be a dearth of proven information, there does exist some small contending source of common knowledge that leads to consistent fears of potential harmful side effects. This comes from general knowledge that mobile phones produce electromagnetic radiation that penetrates the brain within proximity of the phone’s antenna, although it is also known that this is different from the ionizing radiation of X-Rays, for example, which is known to affect DNA. The effects of low-level radiation are still a matter of debate and research, which one can only hope is being undertaken independently, in conjunction with studies that are already being commissioned and funded by the wireless industry. Of those who did not have mobile phones, about half believed them to be harmful; of those who do have mobile phones, about 38 per cent believed them to be harmful; the difference between these two percentages is not statistically significant.

6.8 Paying the mobile phone bill

The 2002 Yankee Group survey stated that nearly 70 per cent of parents said they paid their children’s mobile phone bills¹⁰⁶, while another study revealed that nearly 20 per cent of teenagers and young people paid for service themselves.¹⁰⁷ What we find in this survey does not refute these numbers. It is important to bear in mind the proportions of the age distribution of the sample when looking at Figure 21; the ratios represented are undoubtedly affected by the fact that more teenaged respondents partook in this study than other age groups. It is unsurprisingly revealed that the vast majority of those that fall into the “under 20” category have their mobile phones paid for by parents/guardians; nearly 60 per cent of those who chose “parent/guardian” were indeed in one of the three age brackets under twenty years of age.

Figure 21: Who pays for your mobile phone bill?



6.9 Privacy and mobile phones

Privacy is a delicate issue and culture-specific perception, as well as a “...highly subjective notion, whose interpretation changes over time and space”.¹⁰⁸ Americans tend to be more liberal about their privacy considerations than their European counterparts; much of the reasoning behind this lies in the embedded differences between the common and civil law systems that generally govern the respective continents. In general, the majority of young people surveyed indicated that they would not be willing to give up their mobile phones over concerns on privacy (see Figure 22). It also appears that the difference between males and females (as being *less* likely to give up their mobile phones over privacy concerns) is a significant one, although application of the stringent Bonferroni method diminishes this statistical significance in a sample of this size. Nevertheless, this difference surfaced from the data as a point for consideration.

Figure 22: Privacy as a reason to forego mobile phone use

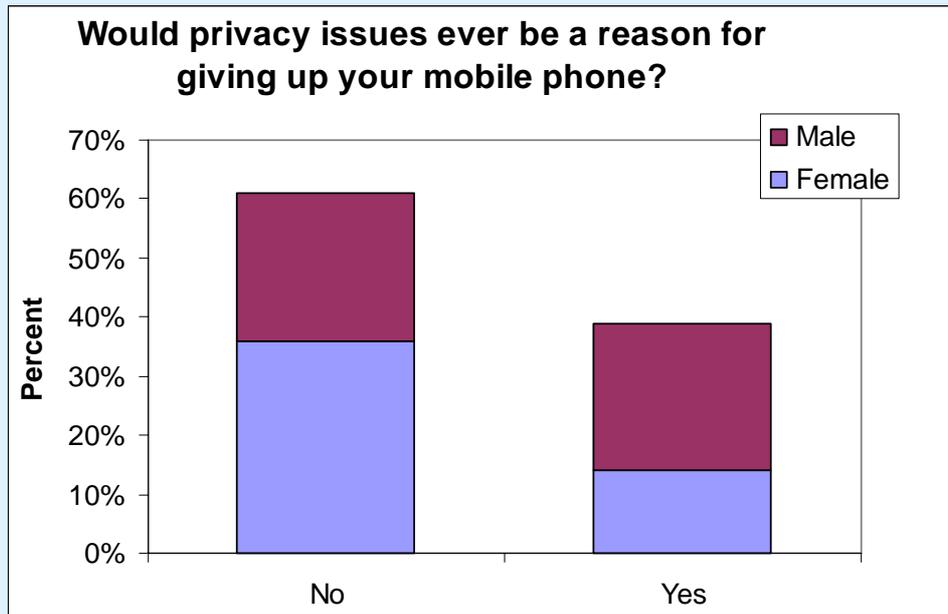


Figure 23: How private do you consider the information stored in your mobile phone?

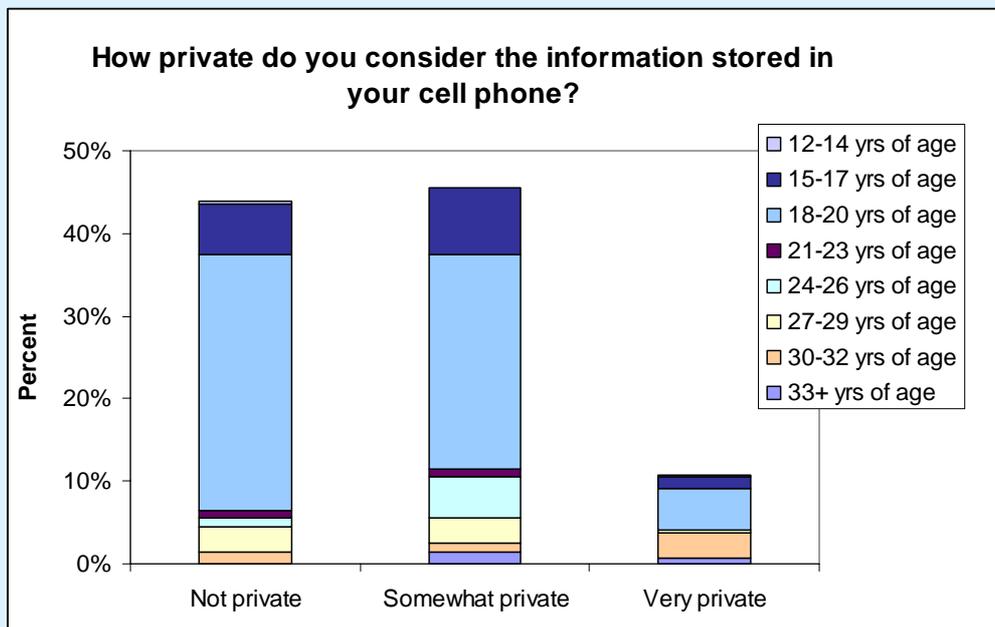
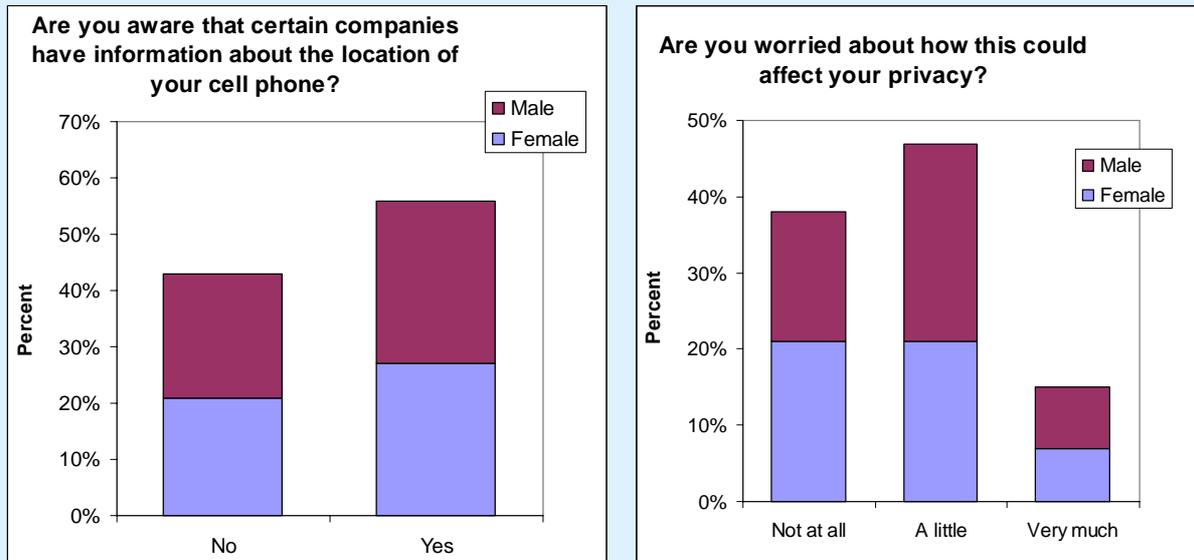


Figure 23 displays the extent to which each age bracket considers the information accumulated in a mobile phone as private. Again, while the percentage proportions reflected in the graphic are indicative of the sample's distribution, it is clear that the majority of teenagers and young adults do not consider that information to be "very private". The minority that does appear to be characterized by a sprinkling of answers from the very youngest or oldest age brackets.

Figure 24a & 24b: Are you aware that certain companies know the location of your mobile phone?

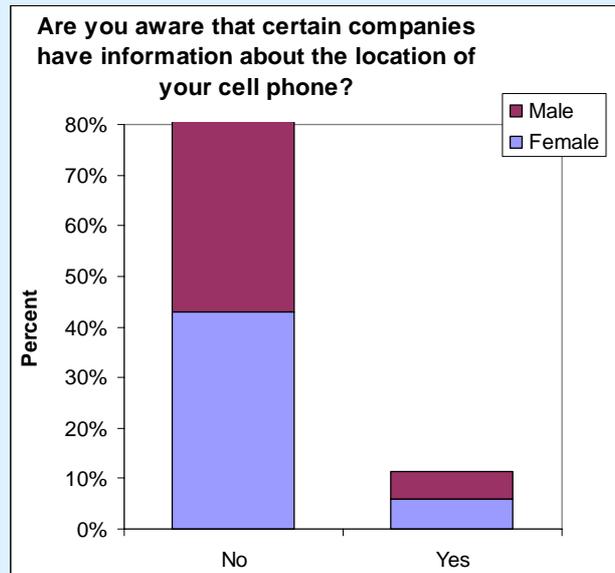


The actualisation of the privacy question was reflected in a question inquiring as to whether or not young people are aware that there are companies that possess information about the location of individual mobile phones. More than half the respondents indicated that they were aware of this fact, although about 42 per cent also admitted having no knowledge of it (see Figures 24a & 24b). Males were not more aware of these facts than females, and while age brackets 2 (15-17 years old) and 3 (18-20 years old) exhibited associations with this variable relative to others in the survey, only the 18-20 year old category continued to have that association in response to the question of whether or not they were “worried about it” (see Figure 24b) Most respondents (about 48 per cent) appear to be “a little” worried about it, some (about 38 per cent) are “not at all” worried, and about 15 per cent are “very much” worried. This coincides well with the information gleaned from previous questions in this privacy series.

6.10 Location-based services

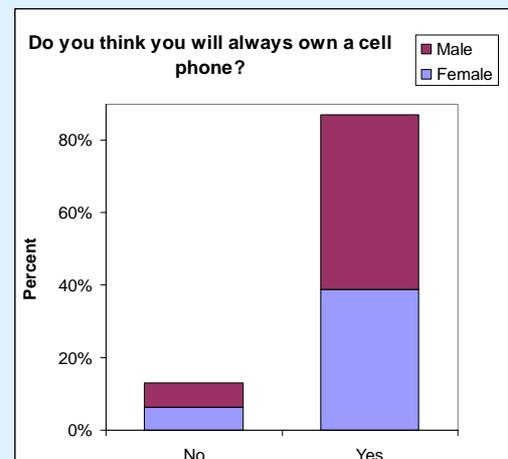
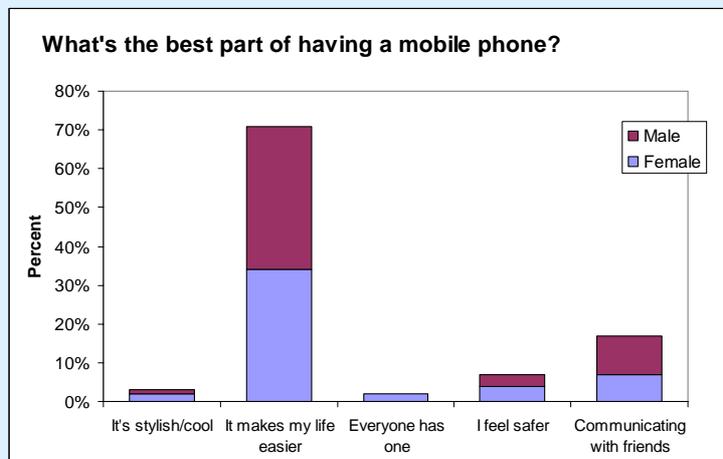
According to Figure 25, the vast majority of users do not know that companies have information about the location of their mobile phones. There is a positive correlation between those that use such services to locate other mobile phone users, with those who explore the full functionality of the mobile phones; and in particular, with those who send pictures. This correlation is significantly negative when looking at the relationship between those using these location tracking services and those playing games, again a possible reflection on the fact that those who use such services are going to be much older mobile consumers (possibly with children they are trying to keep track of). That said, however, the majority do not use services that allow them to locate other mobile phone users and vice versa. It is likely that the range of such services is more appealing to older segments of the mobile phone subscriber population. Whether or not this may actually be a reflection of the sophistication of the dominant service offerings on the market is hard to tell without a comparative study of them; in any case the negative response to this question was among the most noticeable in the survey.

Figure 25: Use of services that allow location of other mobile phone users



Among the preferred reasons for owning a mobile phone, convenience ranked by far as most popular - over and above image/style, peer pressure, safety/security and communication with friends. Moreover, the vast majority of respondents of all ages indicated that owning a mobile phone in the future was something they could foresee (see Figures 26a & 26b). It is interesting that those who had both parents with mobile phones appeared to exhibit a meaningful association with a positive response to this final question. A very negligible number of young people indicated that they did not have a cell phone when both of their parents did; this indicates that there is often consistency of cell phone ownership in those families that are more “connected” than others. A 1997 Gallup poll asked of children in grades 7-12 whether they would expect to see in their lifetime that every person in the country, including kids, would have their own portable phone and personal phone number. Forty-nine per cent said yes, 51 per cent said no, and the rest did not know – out of a pool of respondents sizing 744. More than 75 per cent of young people today believe they will be using a mobile phone in the future—which means, above all, that carriers are in business.

Figure 26a & 26b: The best part of having a mobile phone



In conclusion, a wide variety of information about the characteristics and trends of the youth market for mobile phones has been compiled—both through extensive secondary research and through the execution of an independent survey on a small sample of 12-29 year old individuals in their respective phases of high school, undergraduate and/or graduate education. By and large, the differences between the genders and their perceptions appear to reflect something of a waning trend amidst this new generation of technology adopters. Females and males have many perceptions and habits in common—and while they may differ on the color of mobile phone accessories they choose or the melody of their ringtone—they are fundamentally using their phones for the same purposes and in similar ways. The distribution of this survey sample made it a challenging task to determine the nuanced differences between identified age brackets. However there were some significant associations that emerged overall between the habits—in particular—of the 18-20 year old group as they relate to the public spaces in which they use their mobile phones, the functionality of their telephones, their perceptions of mobile phone multi-tasking (i.e. in the case of driving), and the importance of initial age of usage as an indicator of future use. It is interesting to note in the case of mobile usage whilst driving, that while there is overall acknowledgement that it is a bad idea, a large number of young people do it “sometimes” anyway. The prevalence of “playing games” on mobile phones in this sample is surprising, given that such results would better characterize the youth market in Japan, over that of the US; nevertheless, it appears males and females alike exhibit this preference. Overall, it is evident that mobile phone usage in the context of educational settings (on the East Coast) is going strong, reflecting a higher group penetration level than on average in the United States.

North America is endowed with a robust mobile youth market with tremendous potential for growth, as more and more young teenagers and young people join the mobile bandwagon, and follow in the footsteps of their European and Asian counterparts. The direction of the growth trends is clear – and the utility of such a study lies in identifying those aspects of mobile usage that—in conjunction with their pervasive impact on society—characterize the mobile landscape. For mobile carriers, service providers, content developers, equipment manufacturers, as well as for parents and young people alike, it is important that the key characteristics of this technology be well understood so that the risks associated with its potentially damaging or disruptive aspects can be mitigated. Moving beyond market size and forecasts into the realm of exploring patterns of usage and the multi-faceted impact of mobile technology on teenage social behavior comprises an integral part of this objective.

Q21	How often do you use your phone for:									
A	-- Sending text msgs			p=.047			p=.002			
B	-- Sending pictures			p=.001	p=.001			p=.000		
C	-- Downloading ringtones			p=.002	p=.019					
D	-- Playing Games			p=.000	p=.001			p=.029		
Q24	How private do you consider the info stored in your mobile phone?				p=.002					
Q25 A	Are you aware that certain companies have info about the location of your mobile phone?			p=.014	p=.016					
Q25 B	Are you worried this could affect your privacy?				p=.017					
Q25 C	Would concerns about privacy ever be a reason for giving up your mobile phone?	p=.019			p=.002			p=.009		
Q26	Do you use services that allow you to locate other mobile phone users & allow other users to locate you?				p=.035		p=.000	p=.000		
Q28	What's the best part of having a mobile phone?						p=.000			
Q29	Do you think you will always own a mobile phone?				p=.005					p=.009

Notes: This is a multiple t-test with unequal variances. Grey shaded areas indicate that too few responses were collected in order for statistically significant information to be evaluated. Yellow shaded areas indicate significant p-values, which convey the existence of a meaningful association between the differences in answer between genders or age brackets to various questions. Only selected questions from the survey that yielded significant or interesting results are presented in this paper. The separated age brackets above are assessed in light of the difference between the responses of those who fall *within it*, relative to the sum total of *all the others who fall outside it*. Orange boxes indicate the statistical significance of response areas that remain robust after the application of the Bonferroni method (see Footnote 95); these areas are therefore particularly strong in indicating the association between the nature of the respondent, and the question asked.

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- ¹⁰⁰ When performing a certain number 'k' multiple independent significance tests each at the α (.05) level, the probability of making at least one Type I error (i.e., rejecting the null hypothesis inappropriately) is $1-(1-\alpha)^k$. This means being able to draw conclusions with a confidence level of 95 per cent. The 'null hypothesis' here is that there is no difference between genders in their response to a question, or that there is no significant difference between responses coming from different age brackets. Depending on the resulting p-values in Table 1, it becomes evident whether or not in each case the null hypothesis can be rejected, and statistical association claimed. However, when a significant result does become apparent among forty tests, how confident can we be that the result is really significant? For example, with $k=40$ and $\alpha=0.05$, there is an 87 per cent chance of at least one of the forty tests being declared significant under the null hypothesis - so the effective group-wise Type I error rate is actually a far cry from the desired 5 per cent. One method known as the "Bonferroni Method" is to divide the test-wise significance level by the number of tests: $\alpha\beta=\alpha / k$. In our example, $\alpha\beta = 0.05 / 40 = 0.00125$. This method works by increasing the confidence level of the individual comparisons, so that the resulting combined comparison has at least the specified confidence level. If 40 comparisons are pre-specified, each should have a confidence level equal to $1 - \alpha/40$ so that the simultaneous confidence level in all k comparisons has confidence at least $1 - \alpha$. So if we apply a significance level of 0.00125 to each of the ten tests, there is now only a 5 per cent chance that any of them will be declared significant under the null hypothesis. The biggest criticism of this method is that it is too conservative: by controlling the group-wise error rate, each individual test can be held to a sometimes unreasonably high standard. Nevertheless Table 1 illustrates the first cut of significant associations, as well as what remains significant after applying this method. More information can be found at the following link: <http://home.clara.net/sisa/bonhlp.htm>.
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