

TOTAL CONSUMER SPEND ON WIRELESS SERVICES HAS DECLINED IN THE U.S., BUT USAGE IS UP. WHAT'S GOING ON?

From 2007 to 2010, Americans were spending 9% less on wireless as the smartphone revolution changes the way Americans use wireless

Executive Summary

Mobile voice and data services are nearly ubiquitous. More than 5 billion people use wireless, and one of the most common questions is: How much do you spend and how much does it cost? In order to better understand this, we have compared spending data in 14 countries¹ and across customers of 56 different service providers to get a comprehensive overview.

Never has it been cheaper and more affordable for Americans to use their wireless devices. Today, Americans pay less per voice minute, and for wireless services overall, than they did three years ago. This is not a universal trend. In four of the 14 countries studied, the overall bill has increased in the same period. However, in many countries, even the significant increase in wireless data demand and spending has been eclipsed by the decline in voice spending, leading to an overall decline in consumer spend for wireless worldwide. From 2007 to 2010, in the United States, wireless voice spending per customer has declined by more than \$12 per month and total spending on wireless services has declined by more than \$4 per month.

Nowhere in the world do people consume as many wireless services as in the United States - more minutes, more messages, and more data than anywhere else. The cost per unit is also lower in the United States than almost anywhere else, explaining the large quantities of minutes and megabytes that Americans use. American consumers use more than half a magnitude more wireless services than consumers anywhere else in the world.

What consumers can afford to purchase is a function of the income they earn. In the U.S., the average American needs to work for only one minute (before taxes) to purchase 19 minutes of talk time from most carriers. In Finland, one minute of work purchases only 5.1 minutes of talk time. In South Africa, a person has to work for 2 minutes to purchase 1 minute of talk time.

U.S. consumer surplus from lower wireless prices amounted to \$448 billion in 2010. Stated differently, in 2010, every wireless subscriber in the United States could spend \$1,480 on goods and services due to savings on their wireless spend in prior years.

¹ The countries selected: Brazil, Canada, Finland, France, Germany, India, Israel, Italy, Japan, Korea, Mexico, South Africa, the United Kingdom, and the United States. These countries were selected to provide a good comparison in terms of geographic and economic diversity as well as the different stages of wireless development, in terms of wireless penetration and wireless data usage.

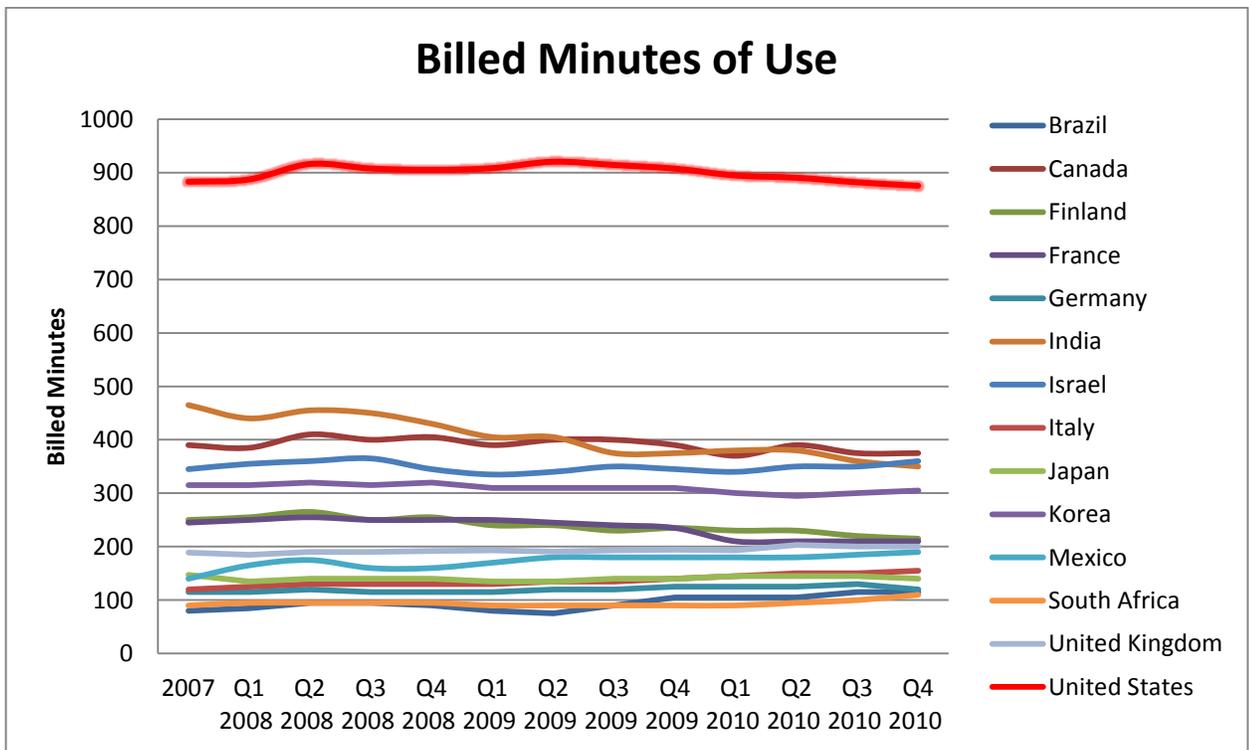
SPENDING TRENDS: VOICE AND DATA

In this chapter, we will discuss what people spend for their wireless services. It is important to differentiate between spending and price. Spending is the price multiplied by the quantity that has been purchased. The United States has some of the lowest prices for wireless voice and data and the highest usage. Americans get more value from wireless communications than anyone else. Americans are consistently spending less on their wireless voice communications in the last three years - from \$45 per month to less than \$33 per month. The decline in voice revenues is a global trend. In eight out of the 14 countries analyzed, including the United States, competition was so intense that the voice revenues declined, while subscriber numbers increased and minutes of voice use remained roughly flat.

At the same time, wireless data has transformed our lives. Mobile computers in the palm of our hand give us the power to access information, watch videos, and listen to music in ways that were pure science fiction only ten years ago. As a result, the amount that the average American spends on wireless data went from just below \$6 in 2007 to just below \$13 per month in 2010. The discrepancy between the huge increase in capabilities and utility that we enjoy through smartphones and the explosive growth in wireless data and the modest increase of just \$7 per month is remarkable. Rarely have Americans received a better deal than that.

Combining wireless voice and data spend, Americans are spending \$4.38 less a month on mobile communications than they did three years ago, while the ability and opportunity to do more with their minutes and their bytes has expanded in an unprecedented way.

We Talk a Lot: Minutes of Use



Source: Recon Analytics, 2011

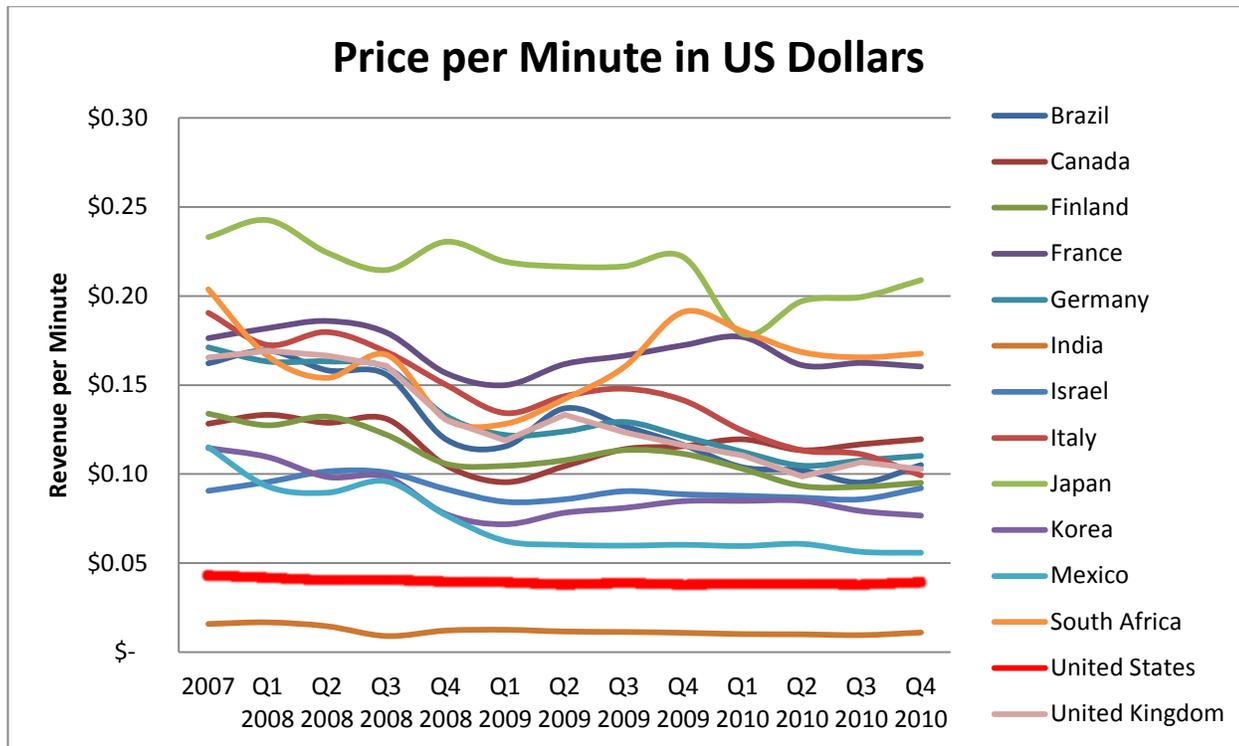
Using roughly 875 minutes a month in 2010, Americans talked more than most others on the planet, at least through their mobile devices, and more than the next two highest talking countries, Canada and Israel, combined. Canadians spend about 375 minutes and Israelis spend about 360 minutes per month talking on their mobile phone. The median talk time for the group of countries we studied is about 200 minutes. Finland, France and Mexico have talk times that are close to the median with 215, 210 and 190 minutes respectively.

What makes the period from 2007 to 2010 quite interesting is that it is the first time that average talk time is not uniformly increasing. While we see countries such as Brazil, Mexico, Italy, and South Africa experiencing 22% to 44% rises in talk time over the four years in question, average talk time in other countries, such as Finland, France and India, has decreased by 14% to 25%. Most other countries have seen their voice usage plateau, with their minutes of use going up or down by less than 5% in four years.

In the United States, the plateauing of wireless voice communications coincides with a dramatic increase of text messaging. According to CTIA's Semi-Annual Wireless Indices Report, Americans sent and received more than 363 billion text messages in 2007, which increased to more than 2 trillion in 2010. On a per-subscriber basis, usage increased from 129 messages per month in 2007 to 565 messages per month in 2010, which is an almost four-fold increase. This trend is replicated in other countries. According to Industry Canada, the telecom regulatory body in the country, Canadians sent and received approximately 235 messages a month in 2010, an increase from approximately 41 messages per month in 2007.

It's Really Cheap: Revenue per Minute in US Dollars

There is a good reason for the simply astonishing number of wireless voice minutes used in the United States. Almost nowhere else in the industrialized world is it as cheap to talk on a mobile phone than in the United States.



Source: Recon Analytics, 2011

In India, the effective price per minute is 1.1 cents, followed by the United States at 3.9 cents per minute and Mexico at 5.6 cents per minute. The most expensive countries are Japan at 20.9 cents per minute, South Africa at 16.8 cents per minute, and France at 16 cents per minute. In almost all countries, the effective price per minute has declined, with the sole exception of Israel, where prices increased by 2% from 2007 to the end of 2010. In the same time period, prices declined by 51% in Mexico, 48% in Italy, and 38% in the United Kingdom.

It comes as no surprise that generally, as price per minute falls, the number of minutes used increases. This relationship is especially strong in countries that have had relatively low usage and high prices. For example, both Brazil and Italy had some of the highest voice prices in the world; however, as the effective prices per minute fell by 35% in Brazil over the four year period we examined, the number of minutes rose by 44%. With prices falling in Italy by 48% over the four year period, minutes of use increased by 29%. The inverse is true. As effective prices per minute increase, usage typically declines.

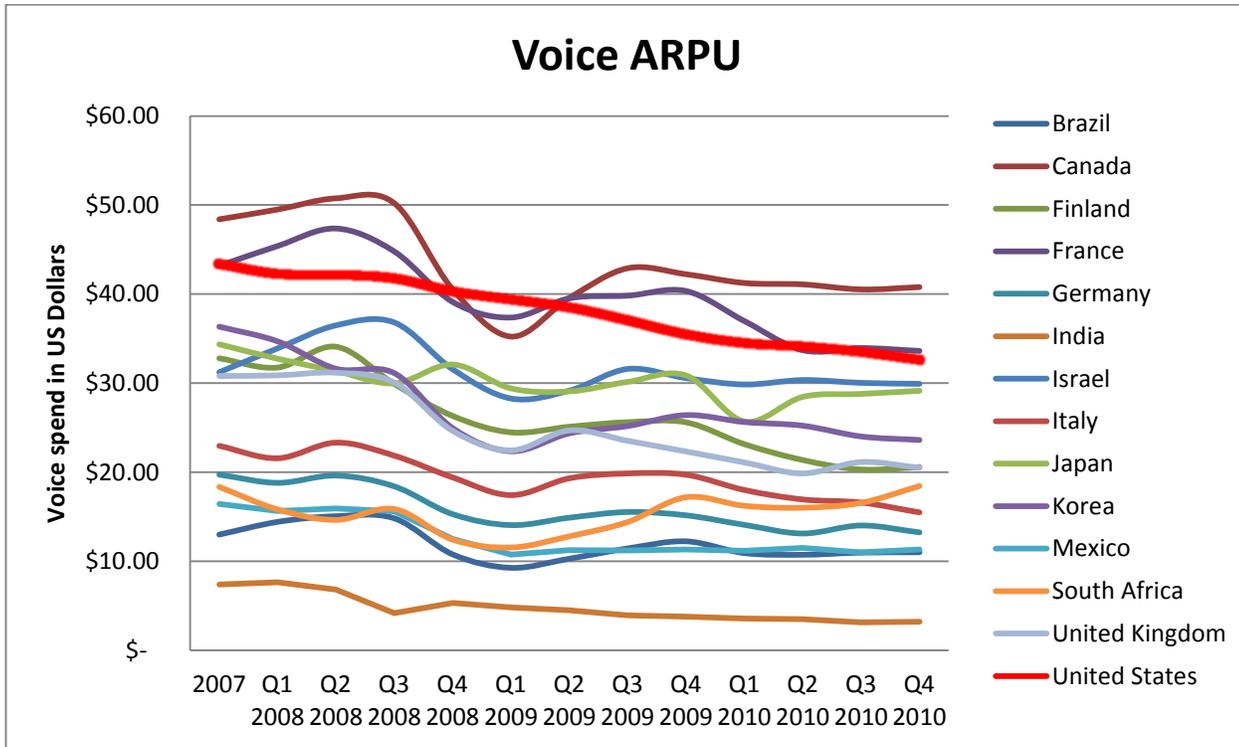
Change in effective price per minute from 2007 to 2010 and the effective price per minute in 2010

Brazil	↓35%	\$0.105
Canada	↓7%	\$0.120
Finland	↓29%	\$0.095
France	↓9%	\$0.160
Germany	↓36%	\$0.110
India	↓30%	\$0.011
Israel	↑2%	\$0.083
Italy	↓48%	\$0.099
Japan	↓10%	\$0.209
Korea	↓33%	\$0.077
Mexico	↓51%	\$0.056
South Africa	↓18%	\$0.168
United Kingdom	↓38%	\$0.103
United States	↓9%	\$0.039

Source: Recon Analytics, 2011

On the decline: Voice ARPU in US Dollars

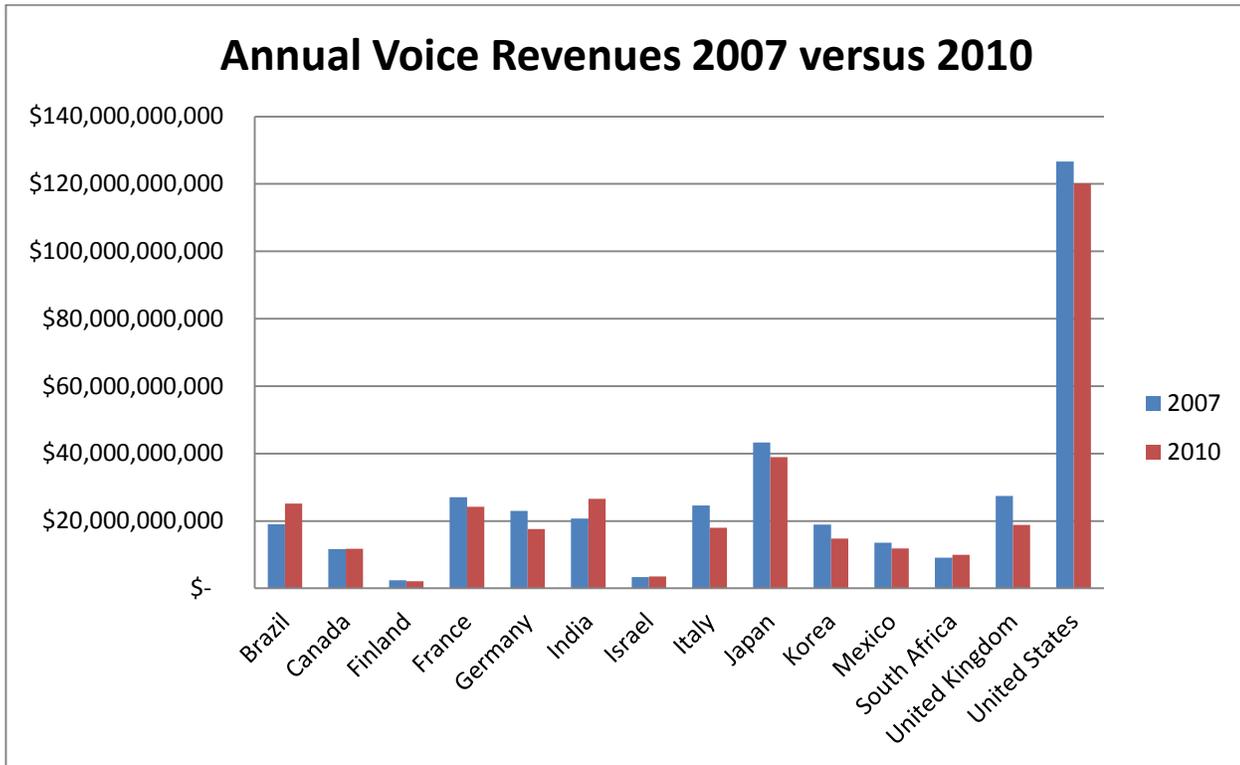
The previous chapters explored the relationship between price for services and usage, and how mobile voice usage has fluctuated over time. This chapter looks at what consumers in the 14 countries under review have actually paid for their wireless voice services.



Source: Recon Analytics, 2011

In the vast majority of countries we looked at for this report, we observed that the average customer spent less on wireless voice services than they did three years ago. In 2010, customers spent on average 25% less for voice communications than they did in 2007. Part of this decline is due to a real drop in prices, and part of it is due to an increase in secondary and even tertiary phones that consumers buy from different operators, splitting their spending among several operators.

South Africa is the only country where spending on wireless voice increased. The reason is that wireless voice usage increased faster than the price per minute declined. As a result, wireless voice spending increased by 1%. In percentage terms, voice spending fell the most in India with a 57% decline. Voice spending in India fell to make wireless affordable outside the big cities. While average income in India is \$1265 per year, the average person in rural India earns significantly less. Without the decline in voice prices in India that led to a decline in voice spend, wireless would have remained a luxury for the Indian upper class, rather than something the average Indian or even a farmer in rural India can use and afford.



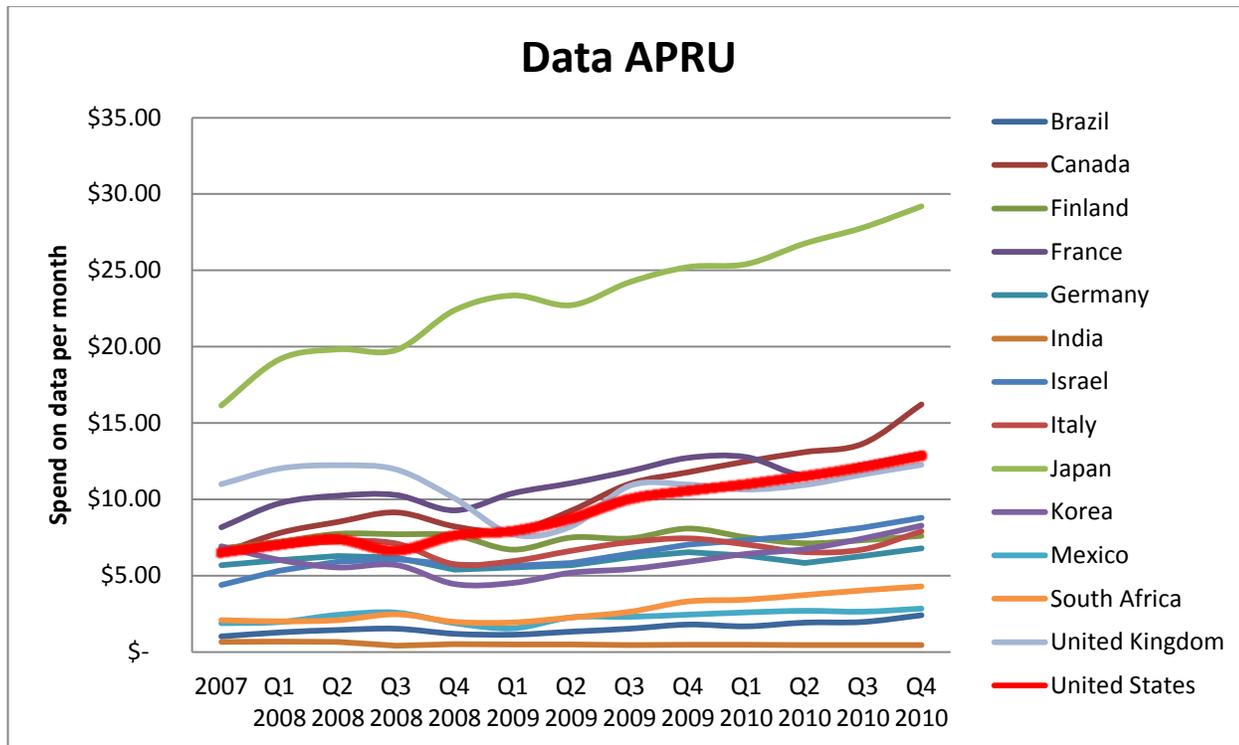
Source: Recon Analytics, 2011

Competition in voice services has been so intense that in 13 of the 14 countries observed, consumers spent less on voice service in 2010 than they did in 2007. In addition, in nine countries observed, the annual voice revenue for wireless carriers declined despite an increase in subscribers.

The analysis shows that voice ARPU levels and price declines are independent from how many carriers are active in a given country. It has a lot more to do with relative income levels, the extent of wireless penetration, and especially competitive intensity. Empirical evidence shows that a higher number of nationwide operators does not necessarily mean lower prices or faster falling prices. Among the countries observed, prices fell the fastest with six operators competing against each other. The second fastest price and spend decline was with three operators. Voice spending fell less with four competitors and even slower with five operators.

On the upswing: Data ARPU in US Dollars

While the user experience of a voice call is virtually identical around the globe—a call is a call, after all—wireless data services are a hodge-podge. Services are significantly different for the majority of users from country to country—and even within a country—depending on what handset a consumer uses and what network they have access to or have chosen to subscribe to. Data ARPU consists of revenue derived from text messaging, wireless Internet access, and at times even fees for voicemail and caller ID. In short, wireless data has come to mean just about anything that is not a wireless voice call. This fact makes comparisons among consumers of wireless data services a difficult task. This Chapter attempts to demonstrate that as wireless subscribers have adopted data services, the increase in usage has been by far greater than the increase in spending.

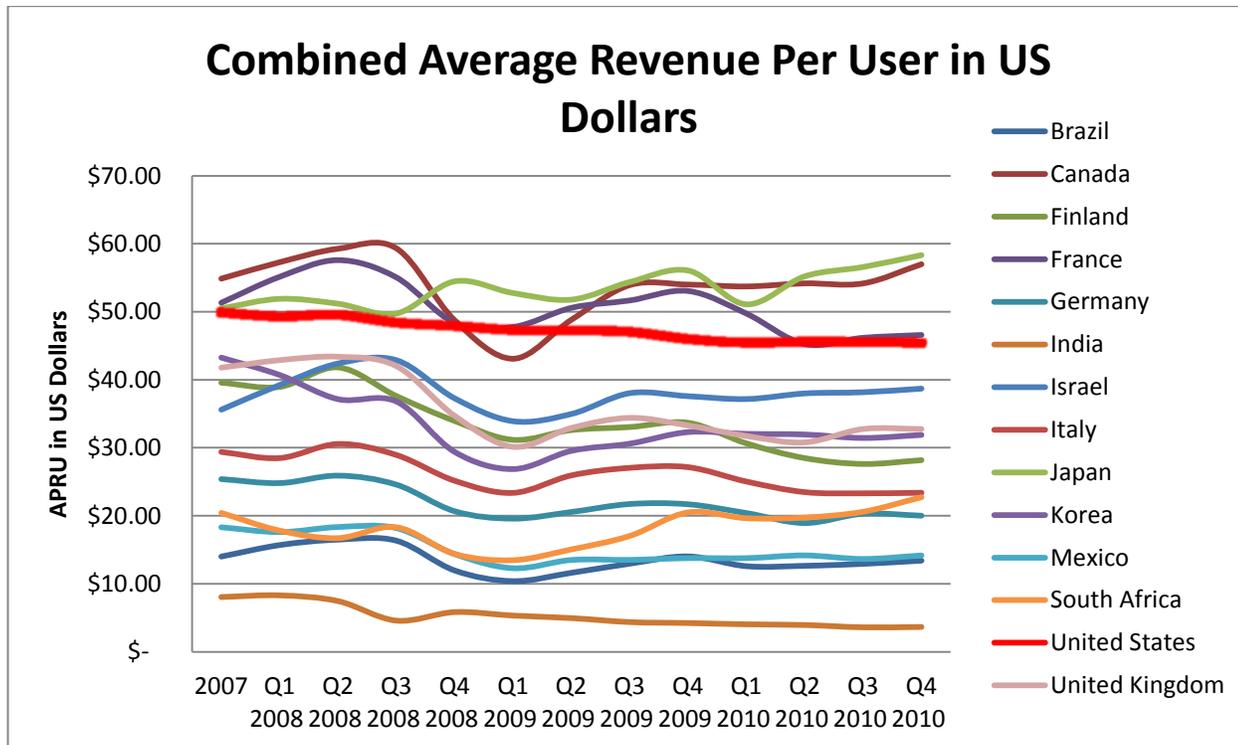


Source: Recon Analytics, 2011

Data ARPU has increased in every country we observed except India. In many countries, wireless customers spent twice as much on wireless data in 2010 as they did in 2007. It is important to note that the modest increase in data spend is due to higher usage, not higher prices. However, the total revenue from data has increased in all countries. On average, based on various operator reports, messaging revenues have doubled during the four year period, whereas data revenues have increased five-fold. The distribution between messaging and Internet data revenue is not consistent and does not follow any regional or developmental pattern. The growth rates give a good indication for the breakdown between the messaging and Internet components of data ARPU—countries with high data ARPU growth are more Internet-centric, whereas low data ARPU growth indicates messaging-centric data usage. This is consistent with the growth in smartphones that occurred during the same time period. Data ARPU is the highest in Japan, where in the four years from 2007 to 2010, it grew from \$16.14 to \$29.20, or about 81%. The second highest data ARPU is in Canada, with \$16.22 which is 150% more than in 2007. The United States comes in at number three with \$12.80, almost doubling since 2007. Similar to voice spend changes, data spend changes do not correlate with how many nationwide facilities-based operators are providing service in the country. In India, with six operators, spending on data fell by 31%; in Brazil, with five carriers, spending increased by 137%. Among the countries with four carriers, data spending increased by 61%, which was almost the same as in countries with three carriers, where it increased 59%. Again, we are unable to verify the economic orthodoxy that more competitors lead to faster price declines.

On the decline: Average Revenue per User

One of the most frequently quoted, but also misunderstood statistics, is the Average Revenue per User (ARPU) metric. ARPU measures what customers spend on average every month for voice and data services. As shown below, it is more an indication of the relative affluence of a country and operator performance than affordability or competitiveness.



Source: Recon Analytics, 2011

Overall ARPU has declined in ten of the fourteen countries studied. The largest increase in ARPU came in Japan (both in percentage and absolute values), with an increase of 16% (or \$7.83) over the last four years. The second largest increase was in South Africa, where ARPU increased by 11% (or \$2.31). In Israel, ARPU increased by \$3.10 (or 9%), while in Canada ARPU went up by \$2.12 (or 4%). In all of these countries, the increase in data ARPU significantly outpaced the decline in voice ARPU, resulting in an overall increase in ARPU. The reasons for declining data ARPU are two-fold: significant competition and, in the case of India, a significant expansion of lower income consumers.

India has the lowest ARPU among the fourteen countries observed. This is due to the expanding adoption of wireless among the lower income consumers in Indian. The next two lowest ARPU countries are Brazil and South Africa, which are also emerging economies with relatively low incomes. Indians pay \$3.65 per month on average for wireless service for voice and data services combined, whereas Brazilians pay \$13.40 and Mexicans pay \$14.17, respectively, per month. The three highest ARPU countries are Japan, Canada, and France. The average Japanese wireless customer pays \$58.33 per month, the average Canadian pays \$57.00 per month, and the average French person pays \$46.60. The United States is in the upper middle field of the pack with \$45.52.

What is more telling than mere ARPU figures is putting them in the context of income, especially when considering how long the average person has to work for their gross income to equal what they spend on a wireless subscription.

Country	2010 Annual Income in US-\$*	Minutes of Work to equal wireless ARPU	Minutes of Use	Minutes of Use per Minute of Work
Brazil	\$10,816	82 (6)	115	1.4 (13)
Canada	\$46,214	82 (6)	375	4.6 (3)
Finland	\$44,488	42 (2)	215	5.1 (2)
France	\$41,018	75 (5)	210	2.8 (8)
Germany	\$40,631	33 (1)	120	3.7 (5)
India	\$1,265	191 (13)	350	1.8 (11)
Israel	\$28,685	89 (9)	360	4.0 (4)
Italy	\$34,059	46 (10)	155	3.4 (6)
Japan	\$42,820	90 (9)	140	1.6 (12)
Korea	\$20,590	103 (12)	300	2.9 (7)
Mexico	\$9,566	98 (11)	190	1.9 (10)
South Africa	\$7,158	210 (14)	110	0.5 (14)
United Kingdom	\$36,120	84 (8)	200	2.4 (9)
United States	\$47,284	46 (3)	875	19.1 (1)

Source: Recon Analytics, *International Monetary Fund, Rank in parenthesis

When it comes to affordability, Americans lead the world: they can talk more than 19 minutes for every work minute. This is almost four times the Finnish mobile subscriber who gets 5.1 minutes of talk time for every minute they work. Unsurprisingly, the more affordable the talk time is, the more people consume. South Africans, who talk among the least with 110 minutes per month, also have to work the longest for it – two minutes of work for every minute of talk. While overall, it is expected that spending levels for wireless service in developing economies will be lower, some of the most advanced and revered wireless markets are also experiencing lower spending levels. Japan and Korea, countries that are heralded as paragons of innovation and progressiveness, are among the least affordable markets for domestic consumers. Affordability is a serious factor in the adoption of wireless services and the benefits that come with widespread adoption and usage of wireless. While the ownership of a wireless device is laudable, low usage and low engagement is signified by fewer minutes of use per month and a slower handset replacement cycle. What really drives the positive economic impact is significant wireless usage. What positive economic impact is gained by wireless devices that nobody uses because they are not affordable enough to use regularly?

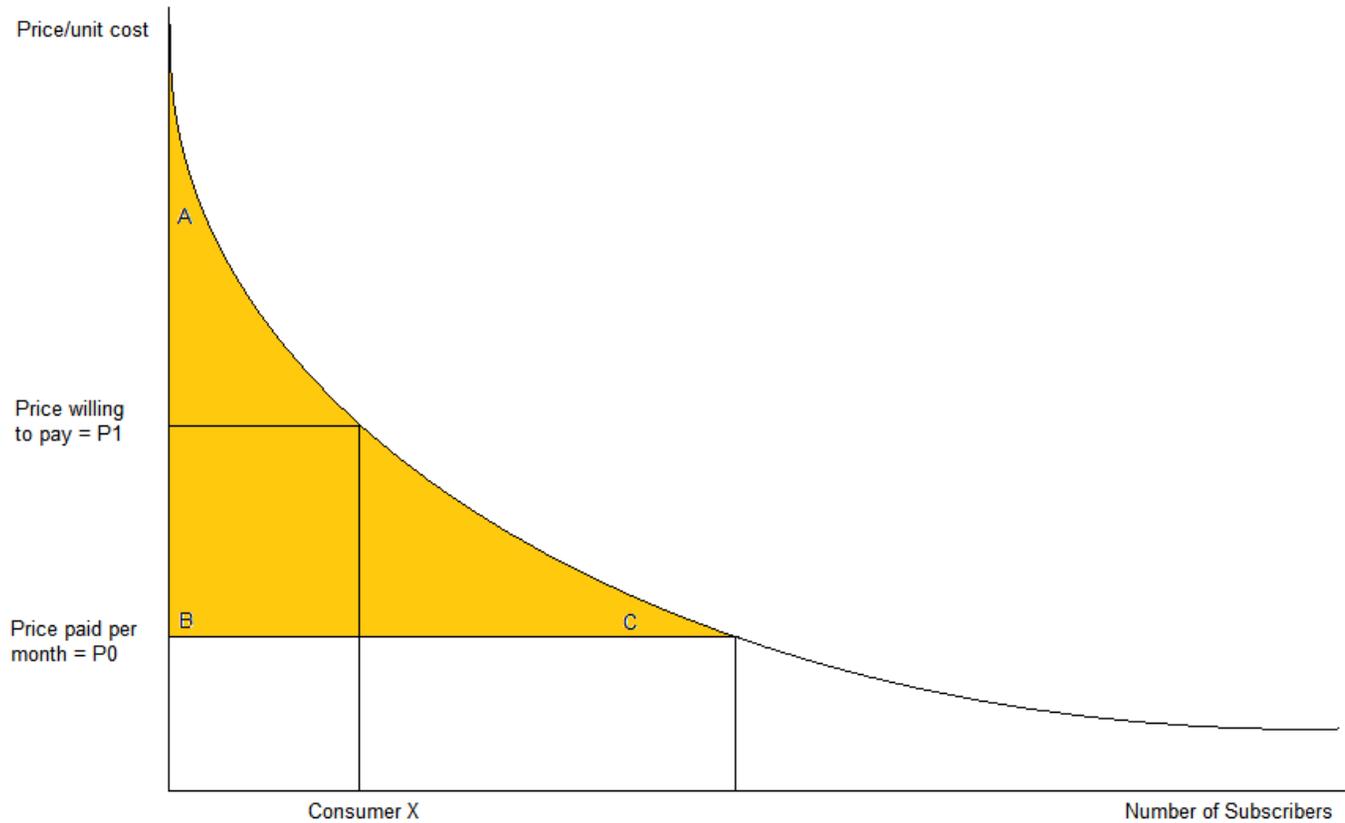
CONSUMER SURPLUS FOR VOICE SERVICES

Consumer surplus measures the difference between what people actually spend versus what they are willing to spend. We have reviewed all available studies estimating the consumer voice surplus for telecom services in the United States, Canada, and the United Kingdom.

- The 2010 wireless voice consumer surplus in the U.S. was at least \$448 billion per year or \$1,480 per wireless subscriber in the United States per year.
- This is an increase of \$291 billion compared to 2004 when an Ovum/Indepen study determined that the wireless consumer surplus was at least \$157 billion per year, demonstrating the continuing and increasing benefit that falling prices have for Americans.
- An Ovum report determined that the Canadian consumer surplus was at least CDN-\$8.8 billion (\$7.8 billion) or CDN-\$264 (\$233) per person per year. Prices have declined in Canada considerably less and usage has not increased as much as in the United States and therefore Canadians are benefitting monetarily considerably less - \$233 versus \$1,480 - than Americans.
- A Europe Economics report indicated that in 2006 the British consumer surplus was at least £17.7 billion (\$32.7 billion) or £610 per person (\$1,130.) Again, Britons have been able to reap fewer benefits from falling wireless prices than Americans.
- Compass Lexecon found that in 2009 the fixed broadband consumer surplus in the United States was \$32 billion per year or \$103 per person per year. The price declines in mobile and usage increases have yielded considerably higher savings for mobile subscribers than for fixed broadband subscribers.

In the United States, the consumer surplus has significantly increased over the six year period from 2004 to 2010. The consumer surplus increased by \$291 billion per year to \$448 billion in 2010. Due to the ongoing competition in the US wireless market, prices for voice services continue to be driven downward.

The consumer surplus is the amount that consumers are able to spend on other goods and services, and are therefore better off by that amount. The entire consumer surplus is depicted below by the yellow colored area ABC.

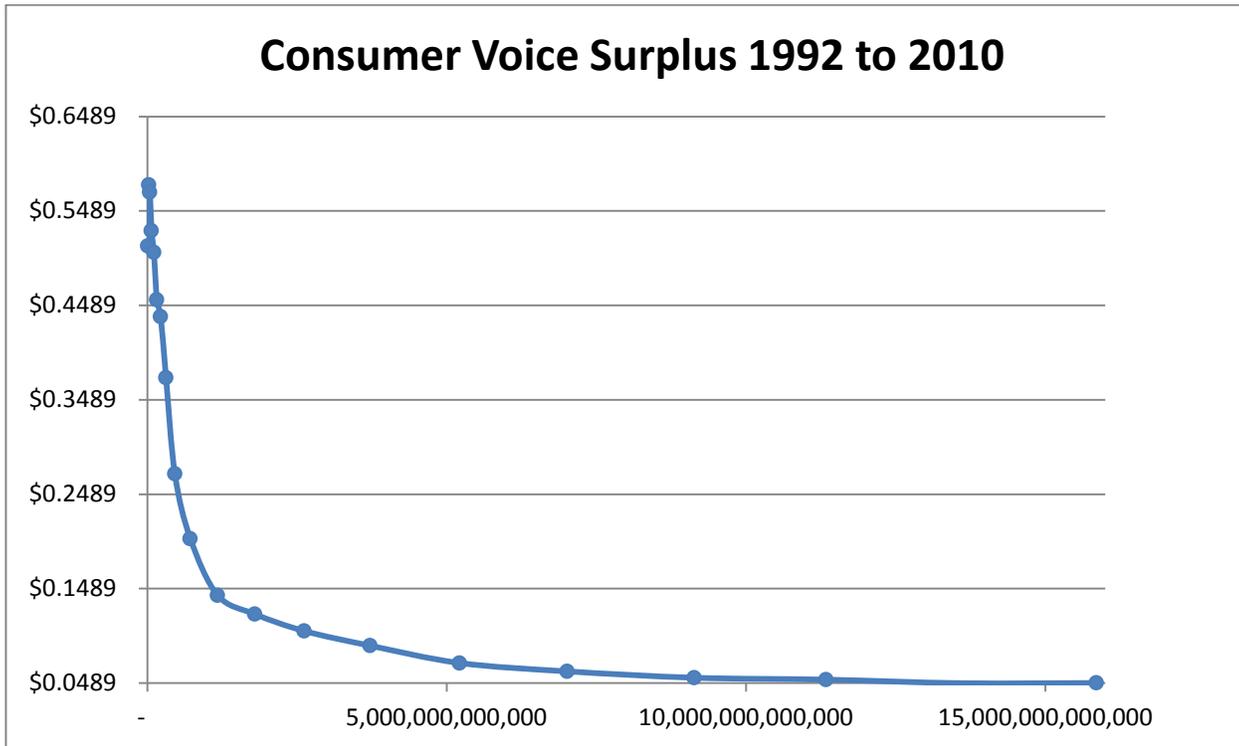


Source: Recon Analytics, 2011

The chart above also shows the consumer surplus for an individual. Consumer X would be willing to pay price P_1 , but due to the competition in the market, prices have declined to price P_0 . Through the price decline, Consumer X receives a consumer surplus of P_1 minus P_0 , which he or she can spend on other activities, save or invest. The ABC area represents the entire consumer surplus from the earliest adopters to people that have just recently adopted wireless due to the low prices. The consumer surplus measures the entire benefit, both commercial and social, that wireless subscribers enjoy through wireless services.

The consumer surplus for wireless voice communications was \$448 billion in 2010, or \$1,480 per person per year. This is a significant increase from the last calculation I conducted as part of an Ovum/Indepen report called *The Impact of the US Wireless Telecom Industry on the US Economy* in September 2005, when David Levin and I calculated the total consumer surplus to be \$157 billion per year based on 2004 figures. We found that almost all the consumer surplus in 2004 was derived from voice communications.² The almost tripling of the consumer surplus is due to a decline of the effective price per voice minute and an increase in usage. The effective price per minute fell from 8.6 cents in 2004 to 4.9 cents in 2010. In the same period, the amount of billable minutes increased from 559 million to 1.225 billion. In 2010 alone, more minutes were consumed in the United States than from the beginning of wireless communication to the year 2001 combined.

² Both calculations rely on data derived from CTIA's Semi-Annual Wireless Industry Indices Report.



Source: Recon Analytics, 2011

In the chart above, the lower bound of the consumer surplus is displayed as the entire area under the curve. This curve, with the number of minutes consumed instead of subscribers, was used because there is no empirical data to construct the demand curve to estimate the consumer surplus. Minutes of use uses a more conservative approach that underestimates the consumer surplus substantially. Consumers who were using wireless in the year 2000 at those prices are willing to use the same or more minutes at 2010 levels. This means that the true demand curve is to the right of the curve above.

Let's put this in context:

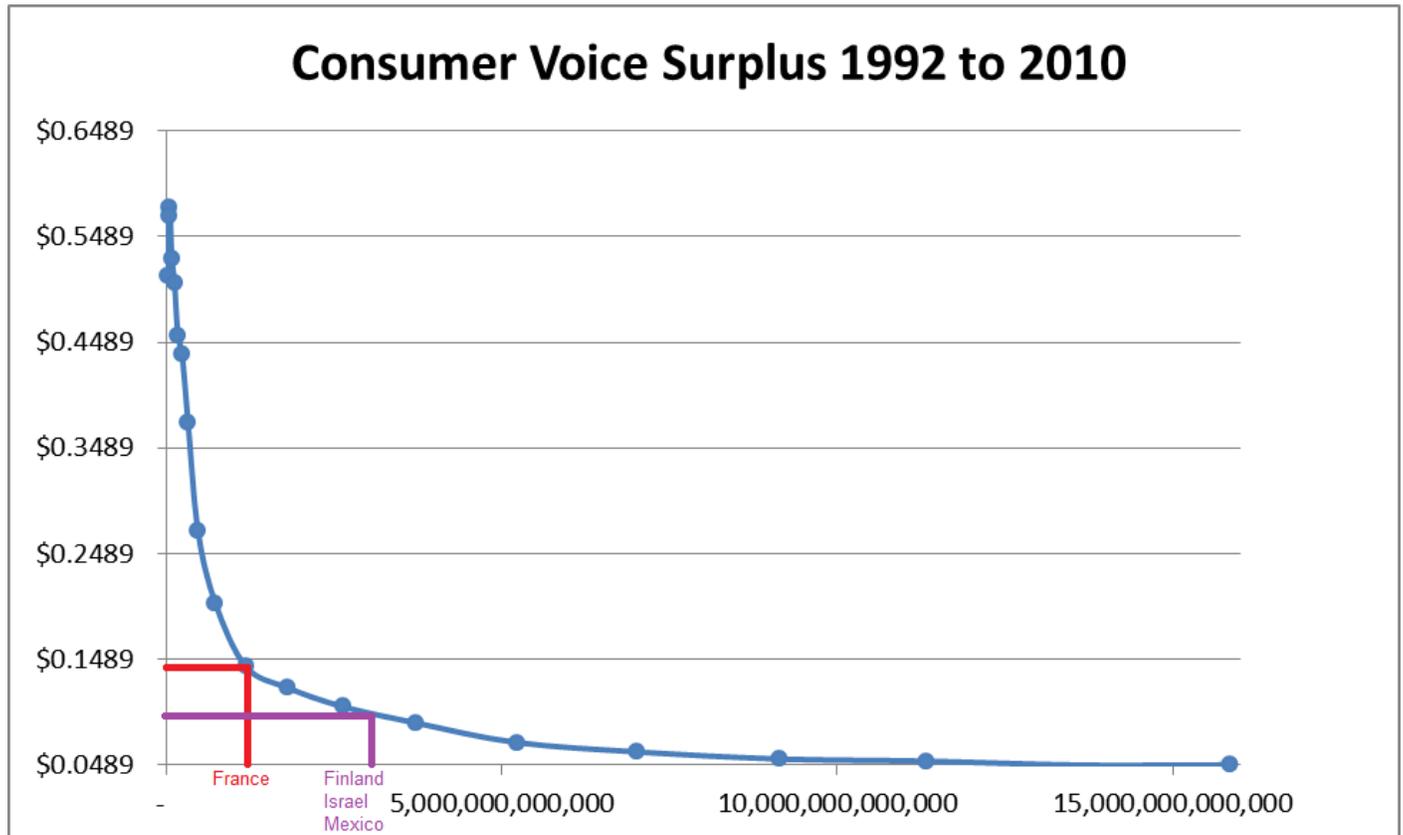
In 2004, the wireless economy had voice revenues of \$97 billion and its consumer surplus was \$157 billion, or roughly 1.6 times larger than service revenues. In the following six years until 2010, voice service revenues increased to \$110 billion while the consumer surplus, due to rigorous competition increased to \$448 billion, or roughly 4.1 times larger than the service revenues. This shows that in the last six years, consumers were the clear winners of wireless competition, with the consumer surplus increasing by 285%, while total service revenues only increased by 13%.

Let's look first at another segment that has been identified as critical to the competitiveness of the United States: Fixed Broadband. Mark Dutz, Jonathan Orszag, and Robert Willig from Compass Lexecon wrote a report³ in 2009 that examined the consumer surplus of fixed broadband to consumers. Their calculations, based on Forrester Research's annual North American Benchmark Survey, concluded that the consumer surplus for fixed broadband was \$32 billion per year, up from \$20 billion per year in 2005. The wireless voice consumer surplus is more than 14 times that of the fixed broadband sector.

Internationally, there have been only a few studies looking at the consumer surplus created in various countries. In 2010, Ovum published a report on the Benefit of the Wireless Telecommunications Industry to the Canadian Economy and concluded that in 2008 the Canadian wireless consumer surplus was \$8.8 billion. This compares to service revenues of \$15.49 billion in the same year. Canada's 2008 wireless consumer surplus was only a little bit more than half of the industry's service revenues. Every Canadian benefitted from a consumer surplus of \$264 per year.

³ The Substantial Consumer Benefits of Broadband Connectivity for U.S. Households; Mark Dutz, Jonathan Orszag, and Robert Willig; Compass Lexecon, July 2009.

In 2006, Europe Economics published a paper on the economic impact of the use of radio spectrum in the United Kingdom. It found that the consumer surplus was £37.7 billion compared to service revenues of £17.7 billion or roughly 2.1 times larger than service revenues. This translates into a consumer surplus per person per year of £610 or \$1,130 per United Kingdom resident.



Source: Recon Analytics, 2011

Plotting several other countries onto the US consumer voice surplus shows that the consumer voice surplus is still substantially larger than that of any other country we studied. Finland, Israel, and Mexico had the lowest effective price per minute outside the United States with 7.8 cents, 7.9 cents and 7.6 cents, respectively.

In comparison, the US surplus was 4.8 cents. If the purple horizontal line is the lower bound, then the current consumer surplus is about 30% larger than what would prevail at Finnish, Israeli, or Mexican price levels and more than twice as large as it would be if the US had French price levels.

Conclusion

Since 2007, the wireless industry has made a transformational change. The iPhone and other smartphones have dramatically rearranged the wireless landscape. In most countries studied, wireless has become more affordable. In many countries, the voice price declines have been so significant that the total voice revenue in the country actually declined. The overall amount Americans spend for wireless has declined by \$4.38 per month from 2007 to 2010, predominantly driven by a dramatic decline in voice spend of \$10.46 per month. In the United States, spend on wireless data has increased by \$6.08 per month.

The United States has the highest usage among the countries we have studied and most likely in the world. At the same time, it has some of the lowest prices for voice and data services in the world. Only India, with average income levels that are 1/37th of the United States, has a lower cost per minute than the United States.

Through the falling prices in the United States, the consumer surplus increased in 2010 to \$448 billion per year. This equates to \$1,480 per year that every American wireless subscriber can spend on other goods and services through the lower wireless costs they have incurred through these price levels. This is a significant increase from the last calculation conducted as part of an Ovum/Indepen report six years ago where the total consumer surplus was computed to be \$157 billion per year based on 2004 figures. This demonstrates the continuously increasing benefit that the mobile industry provides to the American people through lower prices. The consumer surplus computed in this report for the United States is higher, both on an absolute and on a per capital basis, than what has been published for any other country. The significant benefits that the American wireless industry is providing is highlighted through the comparison with similar studies performed overseas and for other technology segments: The consumer benefits that US wireless customers are enjoying are greater than anywhere else in the world.

Addendum

The following operators were studied for this report:

Brazil	Germany	Italy	South Africa
Claro	E-Plus	3	Vodacom
Oi	O2	TIM	MTN
Nextel	T-Mobile	Vodafone	United Kingdom
TIM	Vodafone	Wind	Everything Everywhere
Vivo	India	Japan	Orange
Canada	Bharti	NTT DoCoMo	O2
Bell Mobility	BSNL	KDDI au	T-Mobile
MTS	Idea	Softbank Mobile	3
Rogers Wireless	Reliance	Korea	Vodafone
Telus	Vodafone	LG Telecom	United States
Finland	Israel	Korea Telecom	AT&T
Elisa	Cellcom	SK Telecom	Leap Wireles
DNA	MIRS	Mexico	Metro PCS
Sonera	Partner	Iusacell	Sprint Nextel
France	Pelephone	Movistar	T-Mobile
Bouygues		Nextel	Verizon Wireless
Orange		Telcel	
SFR			