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HIGHLIGHTS

- ▶ Operating revenues for the telecommunications industry were \$7.4 billion in the first quarter of 2000, a 9.3% increase from first quarter, 1999.
- ▶ Operating profit totalled \$1.3 billion in the first quarter, or 17.0% of operating revenues.
- ▶ Capital expenditures for the wireline and wireless industries were \$775 million and \$245 million, respectively, representing 13.2% and 19.8% of wireline and wireless operating revenues. Per capita wireline investment this quarter was \$25.34, while wireless capital expenditures amounted to \$33.91 for each mobile subscriber.
- ▶ There were 78,347 full-time employees this quarter, a 1.9% decrease from the first quarter of last year. This entailed a loss of 1,597 full-time employees in the wireline industry, however 569 full-time positions were added to the wireless industry over the same period.
- ▶ Nearly 28.3 million voice-grade access paths were available to the public-switched telephone network, comprising 21.1 million public access lines and 7.2 million mobile telephone subscribers.
- ▶ Most of the recent growth in access has come from wireless or mobile services, which increased 28.3% this quarter, from the first quarter of 1999.

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- .. figures not available.
- ... figures not appropriate or not applicable.
- nil or zero.
- r revised figures.
- x confidential to meet secrecy requirements of the Statistics Act.
- () negative value.

Abbreviations

- n.e.c not elsewhere classified
- FTE Full-time equivalents
- VGE Voice-grade equivalents

North American Industry Classification System - NAICS (catalogue 12-501-XPE)

- 5133 Telecommunications
- 51331 Wired Telecommunications
- 51332 Wireless Telecommunications
- 51333 Telecommunication Resellers
- 51334 Satellite Telecommunications (including Satellite Resellers)
- 51339 Other Telecommunications Services

ANALYTICAL OVERVIEW

National and Industry Indicators

The telecommunications industry posted gross **operating revenues** of \$7.4 billion in the first quarter of 2000, an increase of 9.3% from first quarter, 1999. Wireline telecommunications services accounted for 79.6% of total industry operating revenues, while wireless, resellers, satellite, and other services accounted for 20.4% of the industry total (Figure 1).

Local services continued to represent the largest share (28.9%) of the \$5.9 billion in total wireline operating revenues. Long distance services were not far behind. They were \$1.4 billion (23.2%) of total wireline operating revenues.

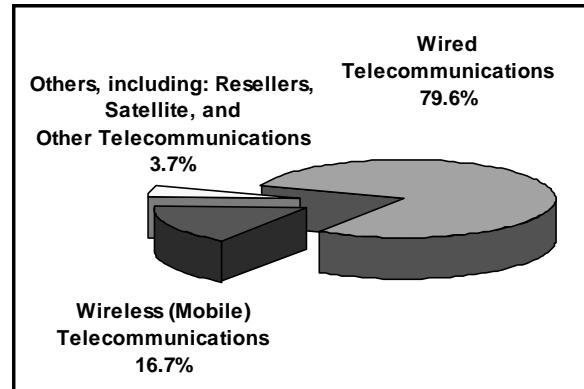
Operating revenues in the wireless industry were \$1.2 billion this quarter. Local services were the wireless industry's major source of revenues. At 65.5% (\$810 million) of the total, local revenues increased 16.6% from the first quarter of last year.

Operating profit totalled \$1.3 billion in the first quarter, or 17.0% of operating revenues. Returns varied widely, however, depending on the telecommunications industry. The operating profit for wireline carriers was nearly 22 cents on each revenue dollar, whereas the wireless industry reported a loss of about 2 cents per revenue dollar. The wireless industry has been in a loss position since the second quarter of 1999, reflecting the industry's on-going roll-out costs for new services and for establishing each service provider's presence in a highly dynamic and competitive market (Figure 8, page 18). The reseller, satellite and other industries (NAICS 51333, 4 and 9, respectively) had an estimated operating profit amounting to just over 3 cents for each dollar earned.

The demand for high-technology, capital-intensive applications, which is characteristic of the telecommunications industry, leads to relatively high **capital expenditures**. The wireline and wireless industries had capital outlays of over \$775 million and \$245 million, respectively, representing 13.2% and 19.8% of first quarter wireline and wireless operating revenues (Figure 2). However, this spending level represents a 21.4% decrease from the first quarter of last year, when overall spending was \$1.3 billion and 19.5% and 22.6% of wireline and wireless operating revenues, respectively.

Figure 1.

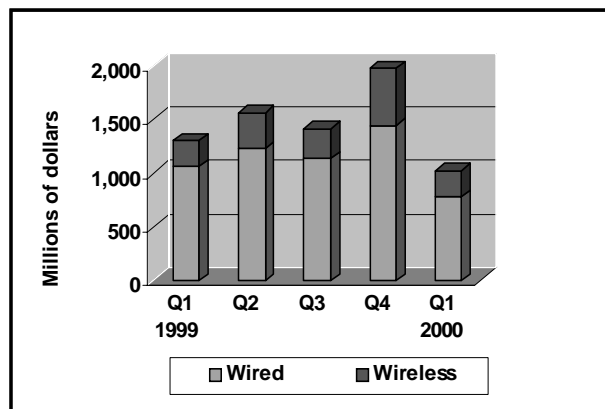
Wireless, Satellite and Resellers generated 20.4% of total operating revenues
(Revenues \$7.4 billion)



Source: Quarterly Telecommunications Statistics, 1st Quarter, 2000.

Figure 2.

Capital expenditures in the wired and wireline industries increased dramatically in the last quarter of 1999, but dropped substantially over the first quarter of 2000
(Capital expenditures \$1.0 billion)

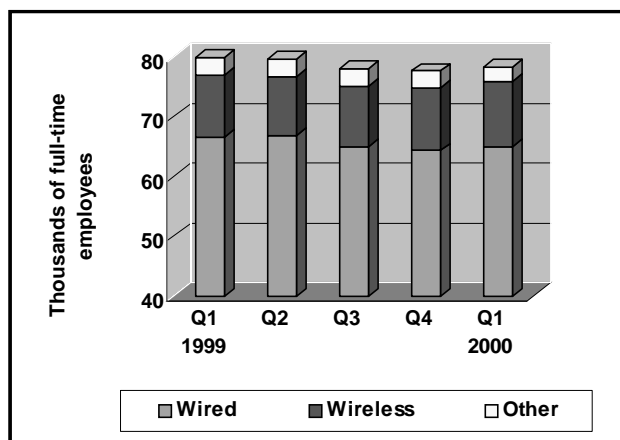


Source: Quarterly Telecommunications Statistics, 1st Quarter, 2000.

Figure 3.

Full-time employment in the telecommunications industries has contracted by almost 2.0% since first quarter, 1999

There were 78,347 **full-time employees** this quarter, a 0.9% increase from the fourth quarter of 1999, but a 1.9% decline from the first quarter of 1999 (a loss of 1,478 full-time employees) (Figure 3). Since the first quarter last year, the wireline industry lost 1,597 full-time employees, while the 'other' telecommunications industries lost 450. Counter this, 569 full-time positions were added to the wireless industry over the same period. **Average annual labour costs** (wages, salaries and benefits) per employee (full-time equivalent) were almost the same for the wireline (\$66,246) and wireless (\$65,643) industries.



Source: Quarterly Telecommunications Statistics, 1st Quarter, 2000.

Public-switched telephone network (PSTN) **wireline access** reached 20.4 million lines at the end of the first quarter, an increase of 7.7% from last year's level. Residential lines accounted for 64.3% of the total and business lines represented 35.7% of PSTN lines (Text Table 1).

Each **ISDN (Integrated Service Digital Network) line** is capable of providing multiple access paths to the PSTN, based on their enhanced bandwidth. With ISDN lines converted to their voice-grade bandwidth equivalents (ISDN BRA = 2 lines, ISDN PRA = 23 lines), total fixed access this quarter was just over 21.0 million lines, an 8.2% increase from what was reported one year ago. This represents strong growth in a market that not too long ago would have been considered to be very mature, and therefore unlikely to post much year over year change.

Text Table 1. PSTN Network Infrastructure - Wired Access

PSTN Access	First Quarter, 2000		
	Residential	Business	Total
Wired Access Lines (NAICS 51331)			
Individual lines	12,466,250	3,345,346	15,811,596
Party lines	98,320	1,595	99,915
ISDN BRA	346	81,987	82,333
ISDN PRA	...	28,393	28,393
Public telephones	...	175,940	175,940
Centrex	...	2,762,312	2,762,312
Other	-	582,259	582,259
Undercoverage estimate	528,613	287,843	816,456
Total Wired Access Lines	13,093,529 (64.3%)	7,265,675 (35.7%)	20,359,204 (100%)
Total voice-grade equivalents	13,093,875 (62.2%)	7,972,3080 (37.8%)	21,066,183 (100%)

Source: Quarterly Telecommunications Statistics, 1st Quarter, 2000.

Cellular telephony has opened an entirely new way to access the PSTN. At quarter end, there were 7.2 million **mobile telephony subscribers** - a remarkable 28.3% increase over first quarter last year. Although the wireless telecommunications industry is outpacing the wireline sector when it comes to expanding access to the PSTN, judging by the continued growth in fixed access lines, consumers still seem to consider mobile telephony as a complement to, rather than a substitute for, their wireline PSTN access. In contrast to wireline access, which is nearly all digital, only 40.6% of wireless access was digital, representing about 2.9 million mobile subscribers (Text Table 2).

Teledensity measures the penetration of telecommunications services in a given population. For the wireline and wireless industries, there were 68.8 and 23.6 access paths (VGE) per 100 inhabitants, respectively. Total teledensity per 100 inhabitants was 92.4 in the first quarter, up 11.8% from last year's first quarter figure (Text Table 3).

Paging subscribers also showed impressive growth this quarter despite the strong growth in cellular telecommunications, considered by some to be a substitute for paging. There were nearly 1.8 million pagers in service in the first quarter, a 30.0% increase over the first quarter of last year.

Long distance **traffic** is nearly completely undertaken via wireline access, which reached just over 13.0 billion minutes this quarter. About 10.0% of total wireline long distance minutes are originating from points outside Canada (Figure 6, page 14). Mobile telephony is primarily used for local communication. Total billed minutes rose substantially since the first quarter of 1999 (52.5%) to over 4.0 billion.

Text Table 2. PSTN Network Infrastructure - Mobile Access

PSTN Access	First Quarter, 2000
Mobile Access (NAICS 51332)	
Digital	2,926,078
Analogue	4,287,450
Total Mobile Access	7,213,528

Source: Quarterly Telecommunications Statistics, 1st Quarter, 2000.

Text Table 3. PSTN Network Infrastructure - Total Access

Teledensity	
Total PSTN Access	27,572,732
Total PSTN Access (VGE)	28,279,711
Wired access (VGE) per 100 inhabitants	68.8
Wireless access (VGE) per 100 inhabitants	23.6
Total PSTN (VGE) per 100 inhabitants	92.4

Source: Quarterly Telecommunications Statistics, 1st Quarter, 2000.

**Telecommunications Industry
(NAICS 5133)**

Summary Tables

TABLE 1. Telecommunications Industry Group (NAICS 5133) Summary, Quarterly, 2000

	First Quarter		Second Quarter		Third Quarter		Fourth Quarter		Year to date	
		00/99 %		00/99 %		00/99 %		00/99 %		00/99 %
Financial indicators (\$000)										
Operating revenues	7,408,406	9.3							7,408,406	9.3
Operating expenses	6,147,114	10.4							6,147,114	10.4
Operating profit	1,261,292	(4.8)							1,261,292	(4.8)
% of operating revenues	17.0	4.0							17.0	4.0
Capital expenditures ¹	1,020,078	(21.4)							1,020,078	(21.4)
Employment (persons)										
Full-time	78,347	(1.9)							78,347	(1.9)
Part-time	<u>12,388</u>								<u>12,388</u>	
Total Employment	90,735								90,735	
% of national industrial employment ²	0.762								0.762	
Total Full-time equivalents (FTE)	84,936								84,936	
Labour costs										
Total Labour costs (\$000)	1,411,415								1,411,415	
Average Labour costs (\$) per FTE employee (annualized)	66,470								66,470	
PSTN access paths (fixed and mobile)										
Total fixed lines and mobile subscribers	27,572,732	12.4							27,572,732	12.4
Total voice-grade equivalents (VGE)	28,279,711	12.7							28,279,711	12.7
Teledensity (VGE per 100 inhabitants)	92.4	11.8							92.4	11.8

Percentages may not sum to totals due to rounding.

¹ Comprises 51331 (Wireline) and 51322 (Wireless) only.

² Survey of Employment, Payrolls and Hours (SEPH). The target population is composed of all employers in Canada, except those in agriculture, fishing and trapping, private households services, religious organizations and military personnel of defence services. For further information see Statistics Canada Catalogue No. 72-002-XPB.

TABLE 2A. Telecommunications Industries Summary, First Quarter, 2000

NAICS industries	51331	51332	51333, 4, 9	5133
thousands of dollars				
Operating revenues				
Telecommunications operating revenues	5,177,302	1,132,988	..	..
Other operating revenues ¹	541,799	68,316	..	..
Undercoverage estimate	<u>177,511</u>	<u>35,744</u>	<u>274,746</u>	<u>488,001</u>
Total operating revenues	5,896,612	1,237,048	274,746	7,408,406
% of total industry	79.6	16.7	3.7	100.0
Operating expenses				
Telecommunications operating expenses	4,316,100	1,141,118	..	..
Other operating expenses	166,193	83,827	..	..
Undercoverage estimate	<u>138,677</u>	<u>35,710</u>	<u>265,489</u>	<u>439,876</u>
Total operating expenses	4,620,970	1,260,655	265,489	6,147,114
% of total industry	75.2	20.5	4.3	100.0
Operating profit				
	1,275,642	(23,607)	9,257	1,261,292
% of operating revenues	21.6	(1.9)	3.4	17.0
Non-operating revenues and expenses (survey units only)				
Non-operating revenues	190,508	5,488	..	..
Non-operating expenses				
Interest expenses	341,445	143,383	..	..
Other	<u>26,848</u>	<u>1,620</u>	..	..
Total Non-operating expenses	368,293	145,003	..	..
Net income before taxes				
	1,097,857	(163,122)	..	..
Capital expenditures				
Survey data	751,982	239,727	..	..
Undercoverage estimate	<u>23,495</u>	<u>4,874</u>	..	..
Total Capital expenditures	775,477	244,601	..	..
% of operating revenues	13.2	19.8	..	..
Employment (persons)				
Full-time - Survey data	62,356	10,481	..	..
Undercoverage estimate	<u>2,575</u>	<u>508</u>	<u>2,427</u>	<u>5,510</u>
Total Full-time	64,931	10,989	2,427	78,347
Part-time - Survey data	9,512	2,483	..	..
Undercoverage estimate	<u>301</u>	<u>16</u>	<u>76</u>	<u>393</u>
Total Part-time	9,813	2,499	76	12,388
Total Employment	74,744	13,488	2,503	90,735
% of national industrial employment	0.628	0.113	0.021	0.762
Total Full-time equivalents (FTE)	70,231	12,237	2,468	84,936
Labour costs				
Full-time - Survey data	1,031,009	169,712	..	..
Undercoverage estimate	<u>44,346</u>	<u>10,633</u>	<u>46,228</u>	<u>101,207</u>
Total	1,075,355	180,345	46,228	1,301,928
Part-time - Survey data	83,586	20,130	..	..
Undercoverage estimate	<u>4,191</u>	<u>344</u>	<u>1,236</u>	<u>5,771</u>
Total	87,777	20,474	1,236	109,487
Total Labour costs	1,163,132	200,819	47,464	1,411,415
Average Labour costs (\$) per FTE employee (annualized)	66,246	65,643	76,927	66,470

¹ Other includes: terminal equipment rentals; sale of telecommunications goods; directory services; retail internet access; installations; customer repairs and maintenance.

TABLE 3. Summary of Telecommunications Industries Analytical Indicators, First Quarter, 2000

NAICS industries	51331				51332			
	I	II	III	IV	I	IV	III	IV
Financial								
Operating revenue per capita (\$)	192.66				40.42			
Operating profit (% of operating revenues)	21.6				(1.9)			
Average revenue per long distance minute (cents) ¹	11.61				24.8			
Capital expenditures per capita (\$)	25.34				7.99			
Capital expenditures (% of operating revenues)	13.2				19.8			
Employment/Labour								
Industry employment as a % of national industrial employment ²	0.628				0.113			
Output per FTE employee (\$)	83,960				101,091			
PSTN access paths (VGE) per FTE employee	300				589			
Average Labour costs (\$) per FTE employee (annualized)	66,246				65,643			
Labour costs as a % of operating revenues	19.7				16.2			
Teledensity (VGE)								
PSTN access paths per 100 inhabitants	68.8				23.6			
Traffic^{1,3}								
Long distance minutes per access path (VGE)	643				55			
Long distance minutes per capita	425				13			

¹ Long distance minutes include domestic and international calls originating in Canada and toll-free calls for wireline carriers, and billed minutes for wireless carriers.

² Survey of Employment, Payrolls and Hours (SEPH). The target population is composed of all employers in Canada, except those in agriculture, fishing and trapping, trapping, private households services, religious organizations and military personnel of defence services. For further information see Statistics Canada Catalogue No. 72-002-XPB.

³ Calculations do not include undercoverage estimates.

**Wired Telecommunications Carriers
(NAICS 51331)**

Tables and Graphs

TABLE 4. Wired Telecommunications Carriers (NAICS 51331), Quarterly, 2000

Wired Telecommunications (NAICS 51331)	First Quarter		Second Quarter		Third Quarter		Fourth Quarter		Year to date	
	\$000	00/99%	\$000	00/99%	\$000	00/99%	\$000	00/99%	\$000	00/99%
Operating revenues										
Telecommunications Operating revenues										
Carrier services										
Contribution	193,681								193,681	
Interconnection	472,726								472,726	
Circuit rentals	31,869								31,869	
Other	<u>32,948</u>								<u>32,948</u>	
Total Carrier services	731,224	(12.4)							731,224	(12.4)
Voice services										
Local telephony	1,704,788	3.2							1,704,788	3.2
Long distance telephony	1,366,376	(1.5)							1,366,376	(1.5)
Calling features	265,339	17.1							265,339	17.1
Connection	<u>91,838</u>	41.1							<u>91,838</u>	41.1
Total Voice services	3,428,341	2.9							3,428,341	2.9
Data and high speed services										
Narrowband packet-switched	223,384								223,384	
High speed switched ¹	<u>170,289</u>								<u>170,289</u>	
Total Data and high speed services	393,673								393,673	
Non-switched services (private lines)										
Narrowband	216,350								216,350	
High speed	<u>27,311</u>								<u>27,311</u>	
Total Non-switched services	243,661								243,661	
Other telecommunications services	<u>380,403</u>								<u>380,403</u>	
Total	5,177,302	6.6							5,177,302	6.6
Other Operating revenues										
Terminal equipment rentals	69,266								69,266	
Sale of telecommunications goods	106,942								106,942	
Directory services	53,484								53,484	
Retail Internet services	55,129								55,129	
Other services n.e.c.	<u>256,978</u>								<u>256,978</u>	
Total	541,799	14.0							541,799	14.0
Undercoverage estimate	<u>177,511</u>	...							<u>177,511</u>	...
Total Operating revenues	5,896,612	8.8							5,896,612	8.8
Revenue performance² (\$)										
Operating revenue per capita	192.66	7.9							192.66	7.9
Voice services revenue per PSTN line	169.30	(2.4)							169.30	(2.4)
Local revenue per PSTN line	84.19	(2.1)							84.19	(2.1)
Long distance revenue per PSTN line	67.48	(6.6)							67.48	(6.6)
Average revenue per long distance minute (cents)	11.61	(23.0)							11.61	(23.3)
Advanced services ratio ³ (%)	20.3								20.3	

¹ Wideband and broadband circuit- and packet-switched services.² Calculations do not include undercoverage estimates, and where applicable are based on voice-grade equivalent (VGE) PSTN lines.³ Ratio of operating revenues from new services compared to traditional telecommunications services (%).

TABLE 4 continued...

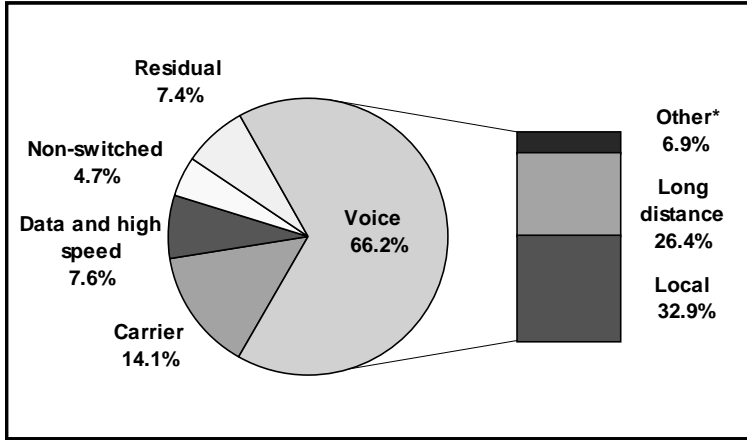
Wired Telecommunications (NAICS 51331)	First Quarter		Second Quarter		Third Quarter		Fourth Quarter		Year to date	
	\$000	00/99 %	\$000	00/99 %	\$000	00/99 %	\$000	00/99 %	\$000	00/99 %
Operating expenses										
Telecommunications Operating expenses										
Carrier services										
Contribution	297,009								297,009	
Interconnection	586,611								586,611	
Circuit rentals	204,460								204,460	
Other	<u>149,881</u>								<u>149,881</u>	
Total - Carrier services	1,237,961	18.3							1,237,961	18.3
Labour expenses	1,098,225	15.1							1,098,225	15.1
Depreciation	993,115	0.1							993,115	0.1
Other	<u>986,799</u>								<u>986,799</u>	
Total	4,316,100	8.4							4,316,100	8.4
Other Operating expenses										
	166,193	3.2							166,193	3.2
Undercoverage estimate	<u>138,677</u>	...							<u>138,677</u>	...
Total Operating expenses	4,620,970	9.8								9.8
Operating profit										
	1,275,642	5.4							1,275,642	5.4
% of operating revenues	21.6	(3.1)							21.6	(3.1)
Capital expenditures										
Survey data	751,982								751,982	
Undercoverage estimate	<u>23,495</u>	...							<u>23,495</u>	...
Total Capital expenditures	775,477	(26.8)							775,477	(26.8)
% of operating revenues	13.2	(32.7)							13.2	(32.7)
per capita (\$)	25.34	(27.4)							25.34	(27.4)
Employment (persons)										
Full-time - Survey data	62,356								62,356	
Undercoverage estimate	<u>2,575</u>	...							<u>2,575</u>	...
Total	64,931	(2.4)							64,931	(2.4)
Part-time - Survey data	9,512								9,512	
Undercoverage estimate	<u>301</u>	...							<u>301</u>	...
Total	9,813								9,813	
Total Employment	74,744								74,744	
% of national industrial employment	0.628								0.628	
Total Full-time equivalents (FTE)	70,231								70,231	
Output (\$) per FTE employee	83,960								83,960	
Labour costs¹										
Full-time - Survey data	1,031,009								1,031,009	
Undercoverage estimate	<u>44,346</u>	...							<u>44,346</u>	...
Total	1,075,355								1,075,355	
Part-time - Survey data	83,586								83,586	
Undercoverage estimate	<u>4,191</u>	...							<u>4,191</u>	...
Total	87,777								87,777	
Total Labour costs	1,163,132								1,163,132	
Average Labour costs (\$) per FTE employee	66,246								66,246	

¹ Includes capitalized labour expenditures.

TABLE 4 continued...

Wired Telecommunications (NAICS 51331)	First Quarter		Second Quarter		Third Quarter		Fourth Quarter		Year to date	
		00/99 %		00/99 %		00/99 %		00/99 %		00/99 %
Network infrastructure (access)										
PSTN access lines										
Individual lines (includes PBX)	15,811,596	1.5							15,811,59	1.5
Party lines	99,915	(14.7)							99,915	(14.7)
ISDN BRA	82,333	13.7							82,333	13.7
ISDN PRA	28,393	28.7							28,393	28.7
Public telephones	175,940	(1.7)							175,940	(1.7)
Centrex	2,762,312	40.1							2,762,312	40.1
Other (includes mobile and WATS)	582,259	(18.0)							582,259	(18.0)
Undercoverage estimate	<u>816,456</u>	...							<u>816,456</u>	...
Total PSTN access lines	20,359,204	7.7							20,359,20	7.7
Residential (%)	64.3								64.3	
Business (%)	35.7								35.7	
Total PSTN voice-grade equivalents (VGE)	21,066,183	8.2							21,066,18	8.2
Residential (%)	62.2								62.2	
Business (%)	37.8								37.8	
PSTN (VGE) per 100 inhabitants	68.8	7.3							68.8	7.3
Residential access lines per 100 households	113								113	
Business access lines per 100 employed persons ¹	66.9								66.9	
PSTN access paths (VGE) per FTE employee	300								300	
Non-PSTN lines										
Digital - Survey data	137,930								137,930	
Analogue - Survey data	<u>40,733</u>								<u>40,733</u>	
Total Non-PSTN lines	178,663								178,663	
Traffic statistics (thousands of minutes)										
Long distance traffic										
Outbound calls	10,195,022								10,195,02	
Toll-free calls	1,571,616								1,571,616	
Inbound calls to Canada	<u>1,244,560</u>								<u>1,244,560</u>	
Total Long distance	13,011,198	30.4							13,011,19	30.4
Traffic performance (minutes)²										
Long distance traffic										
Outbound calls										
per access line (VGE)	503								503	
per capita	333								333	
Toll-free calls										
per access line (VGE)	78								78	
per capita	51								51	
Inbound calls to Canada										
per access line (VGE)	61								61	
per capita	41								41	
Total Long distance										
per access line (VGE)	643	23.7							643	23.7
per capita	425	29.3							425	29.3

¹ Employed persons from SEPH estimate of national industrial employment.² Calculations do not include undercoverage estimates.



* Calling features and connection charges.

Figure 4.

Wireline telecommunications operating revenue shares
(Revenues \$5.2 billion)

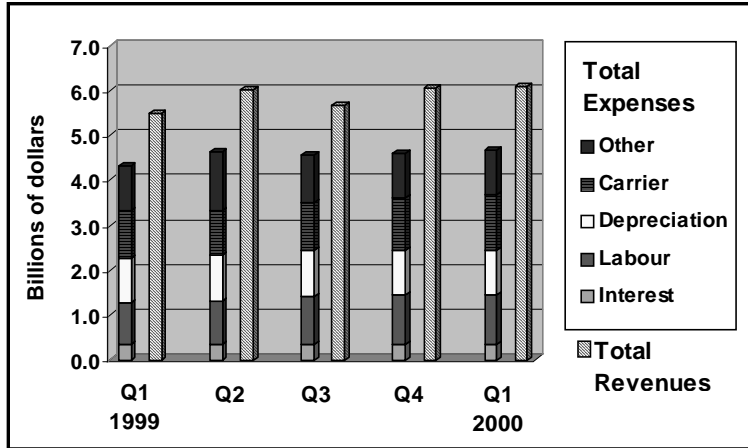


Figure 5.

Total revenues (operating and non-operating) continued to exceed total expenses in the wireline industry.
The difference between total revenues and total expenses represents net income before taxes.

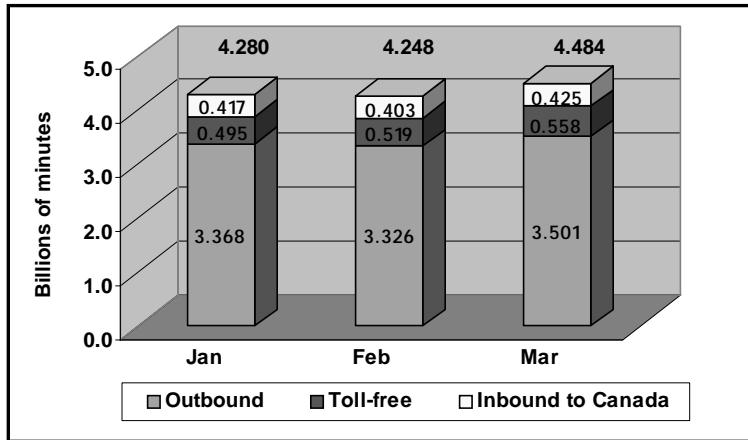


Figure 6.

Monthly wireline long distance minutes, first quarter 2000
Total outbound minutes 10.2 billion
Total toll-free minutes 1.6 billion
Total inbound to Canada minutes 1.2 billion

Source: Quarterly Telecommunications Statistics, 1st Quarter, 2000.

**Wireless Telecommunications Carriers
(NAICS 51332)**

Tables and Graphs

TABLE 5. Wireless Telecommunications Carriers (NAICS 51332), Quarterly, 2000

Wireless Telecommunications (NAICS 51332)	First Quarter		Second Quarter		Third Quarter		Fourth Quarter		Year to date	
	\$000	00/99 %	\$000	00/99 %	\$000	00/99 %	\$000	00/99 %	\$000	00/99 %
Operating revenues										
Telecommunications Operating revenues										
Carrier services	85,158								85,158	
Local telephony										
Fixed (recurrent services)	527,831								527,831	
Air time (measured services)	227,081								227,081	
Other local telephony	<u>54,776</u>								<u>54,776</u>	
Total Local telephony	809,688	16.6							809,688	16.6
Long distance telephony										
Air time	92,203								92,203	
Other long distance telephony	<u>4,873</u>								<u>4,873</u>	
Total - Long distance telephony	97,076	15.8							97,076	15.8
Messaging - Paging	52,247								52,247	
Dispatch services (RCC)	12,756								12,756	
Other telecommunications services	<u>76,063</u>								<u>76,063</u>	
Total	1,132,988	23.4							1,132,988	23.4
Other Operating revenues	68,316	(42.0)							68,316	(42.0)
Undercoverage estimate	<u>35,744</u>	...							<u>35,744</u>	...
Total Operating revenues	1,237,048	16.8							1,237,048	16.8
Revenue performance (\$)¹										
Operating revenue per capita	40.42	15.8							40.42	15.8
Local revenue per subscriber	112.81	(9.2)							112.81	(9.2)
Average revenue per local minute (cents)	22.01	(26.8)							22.01	(26.8)
Long distance revenue per subscriber	13.53	(9.8)							13.53	(9.8)
Average revenue per long distance minute (cents)	24.76	(27.0)							24.76	(27.0)
Paging revenue per subscriber	37.56	0.3							37.56	0.3
Operating expenses										
Telecommunications Operating expenses										
Carrier services	97,184								97,184	
Labour expenses	182,553								182,553	
Depreciation	280,379								280,379	
Other telecommunications expenses	<u>581,002</u>								<u>581,002</u>	
Total	1,141,118	29.9							1,141,118	29.9
Other Operating expenses	83,827	(37.5)							83,827	(37.5)
Undercoverage estimate	<u>35,710</u>	...							<u>35,710</u>	...
Total Operating expenses	1,260,655	21.9							1,260,655	21.9
Operating profit	(23,607)	(194.2)							(23,607)	(194.2)
% of operating revenues	(1.9)	(180.6)							(1.9)	(180.6)
Capital expenditures (\$000)										
Survey data	239,727								239,727	
Undercoverage estimate	<u>4,874</u>	...							<u>4,874</u>	...
Total Capital expenditures	244,601	2.3							244,601	2.3
% of operating revenues	19.8	(12.4)							19.8	(12.4)
per subscriber (\$)	33.91	(20.3)							33.91	(20.3)
per capita (\$)	7.99	1.4							7.99	1.4

¹ Calculations do not include undercoverage estimates.

TABLE 5 continued...

Wireless Telecommunications (NAICS 51332)	First Quarter		Second Quarter		Third Quarter		Fourth Quarter		Year to date	
		00/99 %		00/99 %		00/99 %		00/99 %		00/99 %
Employment (persons)										
Full-time - Survey data	10,481								10,481	
Undercoverage estimate	<u>508</u>	...							<u>508</u>	...
Total	10,989	5.5							10,989	5.5
Part-time - Survey data	2,483								2,483	
Undercoverage estimate	<u>16</u>	...							<u>16</u>	...
Total	2,499								2,499	
Total Employment	13,488								13,488	
% of national industrial employment	0.113								0.113	
Total Full-time equivalents (FTE)	12,237								12,237	
Output (\$) per FTE employee	101,091								101,091	
Labour costs (\$000)¹										
Full-time - Survey data	169,712								169,712	
Undercoverage estimate	<u>10,633</u>	...							<u>10,633</u>	...
Total	180,345								180,345	
Part-time - Survey data	20,130								20,130	
Undercoverage estimate	<u>344</u>	...							<u>344</u>	...
Total	20,474								20,474	
Total Labour costs	200,819								200,819	
Average Labour costs (\$) per FTE employee (annualized)	65,643								65,643	
Network infrastructure (access)										
Mobile subscribers										
Digital - Survey data	2,915,954								2,915,954	
Undercoverage estimate	<u>10,124</u>	...							<u>10,124</u>	...
Total	2,926,078	78.5							2,926,078	78.5
Analogue - Survey data	4,261,328								4,261,328	
Undercoverage estimate	<u>26,122</u>	...							<u>26,122</u>	...
Total	4,287,450	7.7							4,287,450	7.7
Total Mobile telephony	7,213,528	28.3							7,213,528	28.3
Mobile telephony penetration per 100 inhabitants	23.6	27.2							23.6	27.2
PSTN access paths per FTE employee	589								589	
Paging subscribers										
Paging - Survey data	1,390,851								1,390,851	
Undercoverage estimate	<u>388,833</u>	...							<u>388,833</u>	...
Total Paging	1,779,684	30.0							1,779,684	30.0
Paging penetration per 100 inhabitants	5.8	28.9							5.8	28.9
Traffic statistics (thousands of minutes)										
Billed minutes										
Local	3,678,503								3,678,503	
Long distance	<u>392,012</u>								<u>392,012</u>	
Total Billed minutes	4,070,515	52.5							4,070,515	52.5
Traffic performance (minutes)²										
Local minutes per subscriber	513	24.1							513	24.1
Long distance minutes per subscriber	55	23.5							55	23.5
Billed minutes per subscriber	567	18.8							567	18.8

¹ Includes capitalized labour expenditures. ² Calculation does not include undercoverage estimate.

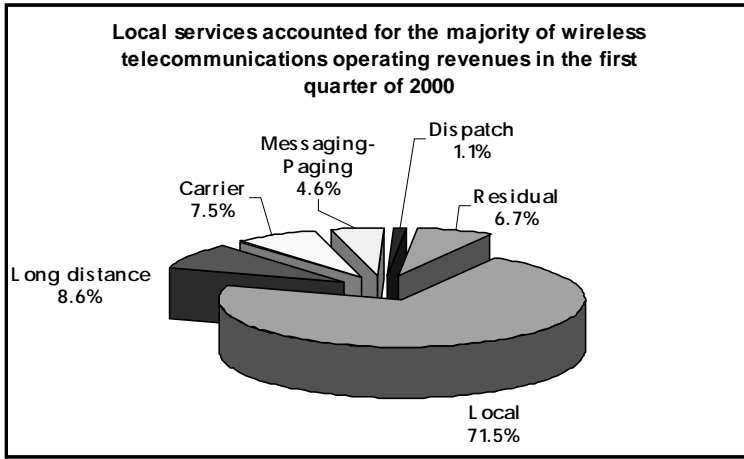


Figure 7.
Wireless telecommunications operating revenue shares
(Revenues \$1.1 billion)

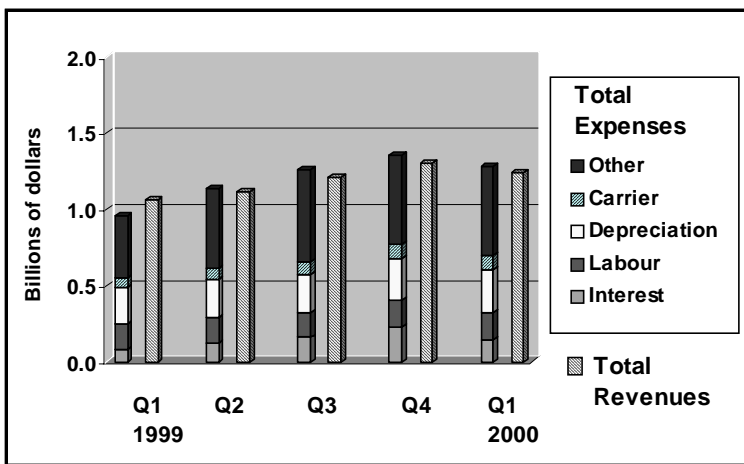


Figure 8.
Total wireless expenses continued to exceed total revenues (operating and non-operating) into the first quarter of 2000

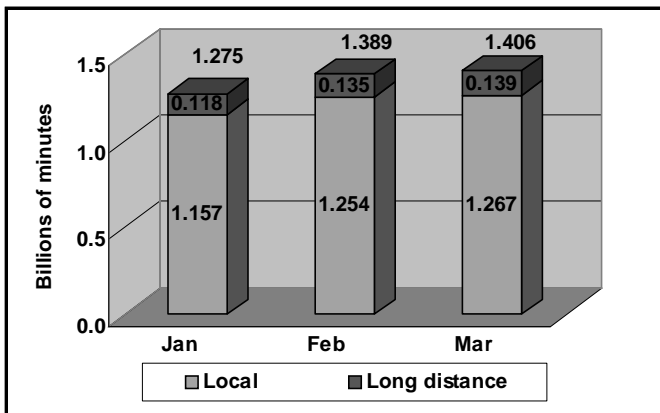


Figure 9.
Monthly wireless billed minutes, first quarter 2000

Wireless billed minutes increased to just over \$4.0 billion in the first quarter of 2000, an increase of 52.5% from first quarter last year. The majority of these were local minutes (\$3.7 billion).

Source: Quarterly Telecommunications Statistics, 1st Quarter, 2000.

**Resellers, Satellite, and Other Telecommunications
(NAICS 51333, 51334, 51339)**

Undercoverage Estimates

TABLE 6. Undercoverage estimates - Telecommunications Carriers (NAICS 51333, 51334, 51339), Quarterly, 2000

Resellers, Satellite, and Other Telecommunications (NAICS 51333, 51334, 51339)	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Year to date
	\$000	\$000	\$000	\$000	\$000
Financial indicators					
Operating revenues	274,746				274,746
Operating expenses	265,489				265,489
Operating profit margin	9,257				9,257
% of operating revenues	3.4				3.4
Employment (persons)					
Full-time	2,427				2,427
Part-time	<u>76</u>				<u>76</u>
Total Employment	2,503				2,503
% of national industrial employment	0.021				0.021
Total Full-time equivalents (FTE)	2,468				2,468
Labour costs					
Full-time	46,228				46,228
Part-time	<u>1,236</u>				<u>1,236</u>
Total Labour costs	47,464				47,464
Average Labour costs (\$) per FTE employee (annualized)	76,927				76,927

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CONCEPTS AND METHODOLOGY

Survey Objectives

The quarterly survey of telecommunications service providers (NAICS 5133) serves to measure the industry's financial performance, aspects of its network infrastructure, and industry operating characteristics relating to employment, capital expenditures and traffic activity. The survey improves on the monthly survey it replaces by: expanding survey coverage to include the major alternative wireline carriers and the wireless industry; providing undercoverage estimates for those units that make up the industry but are not included in the survey (resellers, satellite and small wireline and wireless service providers); using concepts consistent with the redesigned annual survey introduced in 1997; and, reducing reporting burden on respondents who had previously submitted twelve reports each year.

Survey Coverage

The quarterly survey covers the largest establishments primarily engaged in the provision of telecommunications services and which operate telecommunications facilities (wired and wireless providers). Telecommunications service providers are classified to one of the five NAICS telecommunications industries (Wired, Wireless, Resellers, Satellite and Other¹).

¹ *The wired (wireline) industry comprises establishments primarily engaged in operating and maintaining switching and transmission facilities to provide direct communications via land lines, microwave, or a combination of land lines, microwave and satellite link-ups.*

The wireless telecommunications industry comprises establishments engaged in operating and maintaining switching and transmission facilities to provide direct communications via the airwaves, including cellular, personal communications services (PCS), enhanced specialized mobile radio (ESMR), and messaging (paging).

A telecommunications service provider is a reseller if it is primarily engaged in purchasing access and network capacity from owners and operators of telecommunications networks and reselling telecommunications services to their clients.

The satellite industry comprises establishments primarily engaged in operating, maintaining and providing access to fixed and mobile satellite telecommunications facilities for the

Industrial Classification

The North American Industry Classification System (NAICS) was released in 1998. NAICS is the most up-to-date industry classification in use, and was jointly developed by Canada, the United States and Mexico, to reflect the industrial structure of the North American economy for reference year 1997. Reporting units are classified according to the activity in which they are primarily engaged and the main technology they employ. This system allows for more accurate industry classification than the previous 1980 Canadian Standard Industrial Classification (CSIC). For further details about NAICS and for industry concordance between NAICS and the CSIC at all levels, consult the Statistics Canada publication 12-501-XPE, issue number 97001.

Survey Methodology

The quarterly survey collects data from the largest companies corresponding to NAICS industries 51331 (Wired) and 51332 (Wireless), reflecting approximately 97.0% of revenue activity for these industries and 93.0% of revenue activity for the telecommunications industry overall (NAICS 5133) (see Table A, page 22). The annual survey, a census of telecommunications service providers, is used to produce undercoverage estimates for those units that are not surveyed in the quarterly, so that total industry activity can be estimated. NAICS telecommunications industries 51333, 51334 and 51339 are not surveyed because their respondents are generally smaller, and the few that are larger tend to dominate their industries, which would pose disclosure problems if they were to be included.

Variables which may be subject to wide variation from period to period, such as capital expenditures and non-operating revenues and expenses, were not estimated for non-surveyed units. In addition, these activities tend of lines are in use, or in the case of resellers, the actual to be

transmission of voice, data, text, sound and full motion videos. Resellers of satellite communications are also included.

The 'Other telecommunications' industry includes companies providing telecommunications services not covered by the industries described above (e.g., telemetry, satellite tracking, radar stations operations).

less significant the smaller the establishment (which is typical of the non-surveyed industries), such that the survey values for these variables are good proxies for total industry aggregates.

Coverage rates for the 2000 Quarterly survey are calculated by determining how much of total industry activity is attributed to the current quarterly respondents, using the most recent annual data available (1998), taking into consideration buy-outs, mergers and consolidations since 1998, and applying these ratios to the current quarterly data. The table below indicates coverage rates for operating revenues with respect to each NAICS industry. The undercoverage rate is simply the difference between the coverage rate and 100%. Undercoverage rates for other variables are very similar to the rates presented here.

Table A - Coverage rates for Operating Revenues

NAICS	Coverage (%)	Undercoverage (%)	Total (%)
51331	96.9	3.1	100
51332	97.1	2.9	100
51333, 4, 9	-	100	100
5133	93.4	6.6	100

Undercoverage estimates for access lines are not adjusted between quarters because the observed growth in surveyed units (large incumbents and entrants) is not expected to be replicated by non-surveyed units (small, often rural, service providers). The undercoverage estimate simply reflects the number of access lines of the non-surveyed units for the most recent annual data available. Mobile subscriber undercoverage has not been adjusted between quarters, not because non-surveyed units are thought to be static, but because these units constitute such a small share of the industry that any change attributable to them would be negligible. When 1999 annual data is processed (Spring of 2001), 1999 quarterly estimates will be adjusted to reflect the final 1999 compilations. Once updated by the annual data, historical quarterly series will therefore be directly comparable to published annual series. In addition, the assumptions for calculating quarterly undercoverage rates will be reviewed once the 1999 annual data has

been processed, since 1999 will be the first year for which there is annual and quarterly data.

Quality and Limitations of Data

When Statistics Canada receives the completed quarterly questionnaires, they are checked for consistency with previous returns. All unusual occurrences are queried for confirmation and clarified with the respondents concerned. The data are almost always actual amounts, but where circumstances necessitate, best estimates are used from the respondents or derived by Statistics Canada based on the respondent's historical records and current industry trends.

The quarterly survey of telecommunications service providers is not a sample survey and therefore sampling errors do not occur. Non-sampling errors, however may occur. There are potentially four sources of non-sampling error that can be identified in any given survey: coverage error, response error, non-response error and processing error. Unlike sampling error, non-sampling error is not readily quantified. *Coverage error* results from inadequate representation of the intended population. This error may occur during selection of the survey population, or during data collection and processing. There is no evidence of significant coverage error in the 2000 Quarterly Survey of Telecommunications.

Response error may be due to many factors, including faulty design of the questionnaire, interviewers' or respondents' misinterpretation of questions, or respondents' faulty reporting. Frequent changes in company personnel may also lead to response error. The quarterly survey has several features that help respondents to complete the questionnaire, including logic and consistency checks, and a glossary of terms and concepts. Responses are compared from quarter to quarter and any significant deviations are queried by analysts to ensure their accuracy. However, even with these checks, the accuracy of data depends on the respondent's willingness to consult their records.

Non-response error occurs because not all potential respondents cooperate fully. This has not been a concern with the quarterly survey. *Processing errors* may also occur during coding, entry, editing and tabulation of the data. In this survey, procedures for quality control were used during the processing of data, as indicated above, to keep such errors to a minimum.

Revisions

Revisions are necessary as more complete data becomes available. The nature of the telecommunications industry is such that respondents often contact Statistics Canada to update their data or to report errors in data they had previously reported. Revisions are made each quarter to reflect these changes or corrections in the data. The most recent release of quarterly telecommunications data should always be consulted for the most accurate information.

For further information, or to enquire about the concepts, methods and data quality, please contact: Heidi Ertl (613) 951-1891, Haig McCarrell (613) 951- 5948 or Jo Anne Lambert (613) 951-6673, Science, Innovation and Electronic Information Division.

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Note of appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued cooperation and goodwill.

GLOSSARY OF TERMS

Advanced services ratio. The ratio of operating revenues from software enhanced telecommunications services (e.g., calling features), services supporting internet and packet-switched communications, and other high speed applications (switched and non-switched services), and traditional telephony (local and long distance voice, connection and narrowband non-switched or private line services).

Alternative providers of long distance services. Non-incumbent (entrant) facilities-based and non-facilities-based (resellers) companies providing long distance telecommunications services.

Average labour costs per FTE employee (annualized). Total industry labour costs (wages, salaries and benefits paid to full-time and part-time employees) divided by the number of full-time equivalent employees. This calculation is a moving average, such that previous quarter data is included in the current quarter calculation, and adjusted to arrive at an annual estimate. The first quarter estimate is multiplied by four, the second quarter estimate is calculated by summing labour costs for the first two quarters divided by the average number of FTE employees for both quarters, and multiplying that result by two, etc.

Average revenue per long distance minute. Long distance operating revenues divided by long distance outbound minutes (including toll-free).

Broadband access. High capacity two-way links between end-user and suppliers networks (central offices) such as hybrid-fibre-coaxial-cable systems, fibre-to-the-curb and fibre-to-the-home systems for residential users, with speed in one direction exceeding 1.544 Mbps.

Calling Features. Specialized software and database applications linked to telecommunications networks such as call waiting, call forwarding, caller identification, three way calling, speed dialing, etc.; call management services: call display, call return, call screen, call blocking, automatic call-back, etc.; and, tele-messaging: call answer, extension call answer, voice mail, voice menus, etc. These features are commonly offered on a per-use, or on fixed monthly charge basis. Calling features are also referred to as optional or enhanced local services).

Calls/messages, Outbound. Calling/messaging units originating in Canada and terminating in Canada, the United States, and overseas (foreign countries other than the United States).

Calls/messages, Incoming/Inbound. Calls/messages from either the United States or overseas (foreign countries other than the United States) and terminating in Canada.

Capital expenditures per subscriber. Dollar amount of wireless capital expenditures for every wireless subscriber.

Carrier services. Services provided to other telecommunication service providers (common carriers or resellers). This includes contribution, interconnection and other services provided to telecommunications service providers such as co-location, access to support structures, data base access, the recovery of start-up costs, other unbundled elements associated with the provision of dial tone, etc.

Cellular telecommunications. A telecommunications system that uses radio frequencies in the 800 MHz(megahertz) frequency band to provide mobile access to the PSTN (public switched telephone network). Cellular telecommunication can use either analogue or digital transmission technology over a multi-cell architecture.

Circuit. A facility consisting of the equipment and apparatus required to form a path suitable for the transmission of voice, text, audio, video or data communication between telephones and other communication equipment in the telecommunications network.

Connection. The one-time activation of telecommunications subscribers by connecting or reconnecting them to the PSTN. This does not include premises wiring.

Contribution. Payments (per minute or per circuit) derived from domestic and international long-distance telecommunications revenues to cover the revenue shortfall in the provision of local/access services.

Conversation minutes. The actual elapsed period in minutes a respondent's switches, circuits, lines or groups of lines are in use, or in the case of rebillers, the actual conversation time their customers use for calls and

messages. Billing increments other than conversation time were converted to conversation minutes and reported by respondents accordingly.

Data and high speed services. This includes all wideband and broadband services (greater than 64 kbps), as well as narrowband packet-switched services. Wholesale internet services are not reported separately, and are included here.

Dispatch services. Non-switched services provided by radio common carrier (RCC) license holders for the provision of radio communications services (e.g., dispatch services for taxis or field service personnel, mobile data for police departments, etc.).

Employee. Any person drawing pay for services rendered or for paid absences and for whom an employer must complete a Revenue Canada T4 Supplementary Form. This includes full-time (work performed or paid absence of 30 or more hours in a typical work week) and part-time employees (work performed or paid absence of less than 30 hours a week), working owners, directors, partners and other officers of unincorporated businesses. It excludes owners or partners of unincorporated businesses, the self employed, unpaid family workers, persons outside Canada and casual workers for whom a T4 is not required.

Enhanced Specialized Mobile Radio (ESMR). A telecommunications system that uses radio frequencies primarily in the 800 MHz frequency band to provide mobile dispatch services and mobile access to the wireline PSTN. ESMR uses digital transmission technology over a multi-cell network architecture. Its activity is reported as part of mobile telephony.

Establishment. A telecommunications service provider which is an operating entity capable of reporting basic elements of financial and network statistics, such as revenues, (wireless) operated.

Facilities-based operator. A telecommunications service provider that owns or operates any transmission facility (wire, cable, radio, optical, or other electromagnetic system, or any similar technical system) for the transmission of intelligence (signs, signals, writing, images, sounds or intelligence of any nature) between network termination points.

Fixed wireless. The use of radio frequencies for the provision of telecommunication services from a fixed place. This is used for access to the PSTN in remote areas or for alternative access to the PSTN in built-up areas. In these circumstance, fixed wireless is known as wireless local loop (WLL). Fixed wireless can use either digital or analogue transmission technology.

Fringe benefits. Employer contributions to pension plans, medical and other welfare plans, unemployment insurance, Canada and Quebec Pension Plans and workers compensation. Not included are non-taxable benefits provided by an employer such as premiums under a private health plan, recreational facilities, moving expenses and certain employee counselling services. Reported with **Labour costs**.

Full-time equivalent (FTE) employees. Full-time employees plus part-time employees converted to full-time equivalents. For this survey, this is calculated by dividing total part-time labour costs by the average full-time salary (full-time labour costs divided by full-time employees).

Interconnection. Services and facilities beyond the point of interconnection (such as switching and aggregation) to terminate traffic on behalf of an originating telecommunications service provider. This includes transiting or transport where provided pursuant to an interconnection tariff or agreement. Interconnection occurs between local exchange carriers (LEC s) and interexchange service providers (IXC s), including alternative providers of long distance services (APLDS), LEC s and wireless service providers (WSP s), and between domestic and foreign service providers.

Labour costs. The total remuneration paid to employees before deductions (the equivalent to the taxable employment income reported in Box 14 of the employees Revenue Canada T4 slips). This includes regular wages and salaries, overtime pay, paid leave, taxable allowances and benefits, gratuities, director's fees, vacation pay and special payments such as bonuses and commissions, retroactive and accumulated wage payments, termination/severance payments, cost of living adjustments and working owner's draws, for expensed or capitalized labour. This also includes fringe benefits (see **Fringe benefits**). Readers should note that the amount reported as part of Operating expenses may differ from what is reported in the labour cost section, since the latter may include payments for labour that are capitalized.

Local switched telecommunications. The switching and transmission of voice, data, image and video messages over the PSTN within local calling areas.

Long-distance switched telecommunications. The switching and transmission of voice, data, image and video messages over the PSTN between local calling areas.

Messaging. An interactive telecommunications service that provides for information interchange among users by means of store-and-forward, electronic mail, or message-handling functions such as paging and narrowband PCS. Telephone answering services are not included.

National industrial employment. Total national employment from Statistics Canada's Survey of Employment, Payrolls and Hours (SEPH). The target population is composed of all employers in Canada, except those in agriculture, fishing and trapping, private households services, religious organizations and military personnel of defence services. This figure does not include self-employment. For further information see Statistics Canada Catalogue No. 72-002-XPB.

Narrowband PCS. A telecommunication system that uses radio frequencies in the 900 MHz frequency band to provide one or two-way messaging services. This service uses digital transmission technology with radio frequency channels of 50 kHz (kilohertz) or less.

Net income before taxes. Total revenues (operating revenues plus non-operating revenues) less total expenses (operating expenses plus non-operating expenses).

Network access service. Primary connection to a company owned network for the purpose of telecommunications, regardless of the physical characteristics of the link. This includes individual and party line circuits; trunks connecting company facilities with switching devices located on customers premises; licensed radio-telephones; primary connections within networks (i.e., drops); WATS; and primary special services circuits.

Non-switched telecommunications. Dedicated communication lines or paths between specified points for the exclusive use of the lessees or owners typically not involving the PSTN for routing or switching the communication, e.g., private voice and data networks

linking multiple business locations, dedicated links for transferring high-resolution video, etc.

Non-PSTN Lines. Telecommunications lines not connected to the PSTN, e.g., non-switched transport services such as low-speed data links for automated teller machines; private voice and data networks linking multiple business locations; and dedicated links for transferring high-resolution video. Analogue lines (voice, sub-voice) are typically used for alarm monitoring, traffic control, point-of-sale terminals, etc.

Operating profit. Total operating revenues less total operating expenses.

Operating revenue per capita. Industry operating revenue per person based on the quarterly population estimate.

Output per FTE employee. Total operating revenues per full-time equivalent employee.

Packet switched telecommunications. Voice, data or video telecommunications that are divided into packets of fixed or variable length to be routed along non-reserved circuits to their destination. Each packet is addressed and numbered so it can be routed to its proper destination and reassembled in its proper sequence upon its arrival. These packets typically follow various routes depending on what is available at the time, which maximizes the network's operating efficiency.

Paging. A one-way telecommunications system that provides signaling or information transfer by such means as tone, tone-voice, tactile, or optical read-out. Analogue or digital transmission technology may be used.

Paging revenue per subscriber. Paging revenues per paging subscribers (does not include undercoverage estimate).

Personal Communications Services (PCS). Mobile telecommunications using radio frequencies in the 1900 MHz frequency band connected access to the PSTN. PCS uses digital transmission technology over a multi-cell network architecture.

Public Switched Telephone Network (PSTN). The worldwide dial-up telephone network (switching, circuits, transmission and access services), or a portion of that network, used to establish voice and non-voice (text, audio, video or data) communications carried over a path

initially established using normal telephone signaling and ordinary switched long-distance telephone circuits.

PSTN, Centrex access lines. A business telephone service offered by a service provider that permits direct inward dialing to a customer's extensions, transfer of incoming calls from one extension to another, and identification of extension telephones for billing of long-distance calls. Centrex is based on switching equipment usually located on the service providers' premises.

PSTN, Individual access line. A subscriber line arranged to serve one main telephone. This includes PBX (private branch exchange) lines for businesses that have corresponding dedicated ports in the telephone exchange equipment.

PSTN, ISDN access line (Integrated Services Digital Network). A high capacity digital line the equivalent of 2 (BRA) or 23 (PRA) voice grade lines. These are counted as single lines despite their greater capacity. See voice-grade equivalents for a measure that is frequently used to take into account the enhanced capacity of these lines.

BRA (Basic Rate Access) access lines deliver two 64 kbps channels (B channels) and one 16 kbps channel (D channel) over a standard twisted-pair loop. The 64 kbps channels are capable of transmitting voice or data simultaneously while the D channel transmits call control messages and packet data at 9.6 kbps.

PRA (Primary Rate Access) lines can transmit at 1.544 Mbps (T1 trunk facility) consisting of 23 64 kbps B channels and one 64 kbps D channel. The B channels carry voice and data at 64 kbps while the D channel carries out-of-band signaling for one or more primary rate links.

PSTN access paths per FTE employee. Access lines for the wireline industry and mobile subscribers for the wireless industry, per full-time equivalent employee in the respective industries.

PSTN, Other access lines. Wireline access lines not specified by any of the defined categories (individual, ISDN, public, centrex) such as WATS, Mobile access lines (this is not the same as mobile telephony subscribers).

PSTN, Party access line. A subscriber line arranged to serve two or more main telephones (e.g., residential party lines).

PSTN, Public telephones. Coin or card payphones including semi-public phones (payphones available to the public on a restricted basis owing to their location, e.g., those on private premises such as restaurants).

Reseller. A telecommunications service provider primarily engaged in purchasing access and network capacity from owners and operators of telecommunications networks and reselling telecommunications services to their clients. Resellers may own some network facilities such as switching equipment or apparatus to manipulate and control intelligence but do not operate or maintain a full network, nor own transmission facilities such as wire, cable, radio or optical systems.

Retail Internet services. The value reported in these quarterly reports represents only a small part of retail internet services in Canada, as most telecom companies have subsidiary companies or separate operating divisions (ISP's - Internet Service Providers), which are not telecommunications industries according to the North American Industry Classification System (NAICS).

Satellite, fixed. Communications via satellite transmission in which the terrestrial terminal points are fixed.

Satellite, mobile. Communications via satellite transmission in which the terrestrial terminal point can be mobile.

Subscriber. A customer of a wireline or wireless telecommunications service provider having unique access to the PSTN.

Switching equipment. Digital and analogue equipment and related software used to switch traffic over the PSTN. PBX's used as public switches are included whereas PC's used as switches are excluded.

Telecommunications. Any transmission, emission or reception of signs, signals, writing, images, sounds or intelligence of any nature, by wire, radio, visual or other electro-magnetic system.

Telecommunications, wireline (wired). Establishments primarily engaged in operating and maintaining switching

and transmission facilities to provide direct communications via land lines, microwave, or a combination of land lines, microwave and satellite link-ups.

Telecommunications, wireless. Establishments engaged in operating and maintaining switching and transmission facilities to provide direct communications via the airwaves.

Telecommunications, other. Establishments primarily engaged in providing specialized telecommunications services such as satellite tracking, communications telemetry and radar station operation. The includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems.

Teledensity. A measure of the number of phone lines (fixed access lines and mobile subscribers) per 100 of population. Between 40 and 50 lines per 100 of population indicates fairly good density. The OECD average was 48.9 in 1997. Teledensity is a measure of a country's economic development.

Telemetry. The measurement or recording of an activity from a distance by monitoring equipment connected to a telecommunications network.

Telephone. A compact unit containing the parts necessary for the transmission and reception of speech and for ringing or signalling the party called, and which can be interconnected to any other such unit in the general telephone network.

Terminal equipment. Equipment on customer premises connected to telecommunications lines: e.g., PBX's not used for public switching, telephone sets, routers, modems in customer sites, key systems, etc.

Voice services. Services generally associated with voice communication, narrowband or voice-grade communication, including voice telephony, fax, PSTN access, etc.

Voice-grade. A voice-grade access line can transmit voice or data at 64 kbps. They also transmit communications in an audio frequency range between 300 and 3000 Hz, typical of the human voice.

Voice-grade equivalents ('B channel' equivalents). Refer to how many voice-grade lines would be needed to provide the same or equivalent bandwidth to the line in question. ISDN BRA lines (bandwidth = 144 kbps) are the equivalent of 2 voice-grade lines while ISDN PRA (bandwidth = 1.544 Mbps) are the equivalent of 23 voice-grade lines.

Wide area telephone service (WATS). Service provided by a telephone company enabling a subscriber to dial certain distant exchanges on either a flat rate or a measured time charge basis.

Wideband. Telecommunications of bandwidth greater than 64 kbps up to and including 1.544 Mbps. A telecommunications path with 2 way capabilities with speed in at least one direction fitting the criteria described above.

Wireless Broadband Services. A multipoint telecommunications systems that use radio frequencies to allow the transmission and/or reception of information such as multimedia, data, and video over radio frequency channels of 50 kHz or greater (e.g., LMCS). Either digital or analogue transmission technology is used.