Wholesale trade

February 2005

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Statistics Canada
Wholesale trade

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.   not available for any reference period

..   not available for a specific reference period

...   not applicable

0   true zero or a value rounded to zero

0^s value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded

^{p} preliminary

^{r} revised

x   suppressed to meet the confidentiality requirements of the *Statistics Act*

^{E} use with caution

F   too unreliable to be published

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Highlights

- Wholesale sales increased for the fourth time in the past five months, gaining 1.1% in February. Since September 2003, total wholesale sales have generally been rising. Previously they went through a period of declines that started in March 2003. Prior to that, wholesale sales went through a strong period of growth that began in the fall of 2001.

Analysis — February 2005

Wholesale sales increased for the fourth time in the past five months, gaining 1.1% in February. Since September 2003, total wholesale sales have generally been rising. Previously they went through a period of declines that started in March 2003. Prior to that, wholesale sales went through a strong period of growth that began in the fall of 2001.

Of the 15 trade groups, 7 posted gains in February which accounted for 65% of total sales. Wholesalers in the "other products" category (+3.9%), food products (+2.6%) and machinery and equipment (+4.3%) registered the largest gains in terms of value. Computer and electronic products (-2.3%) and pharmaceuticals (-2.5%) posted the steepest declines. However, these same two groups had enjoyed strong growth the previous month.

In constant dollars, wholesale sales increased 0.4% in February.

Chart 1

Wholesale sales

$ billions
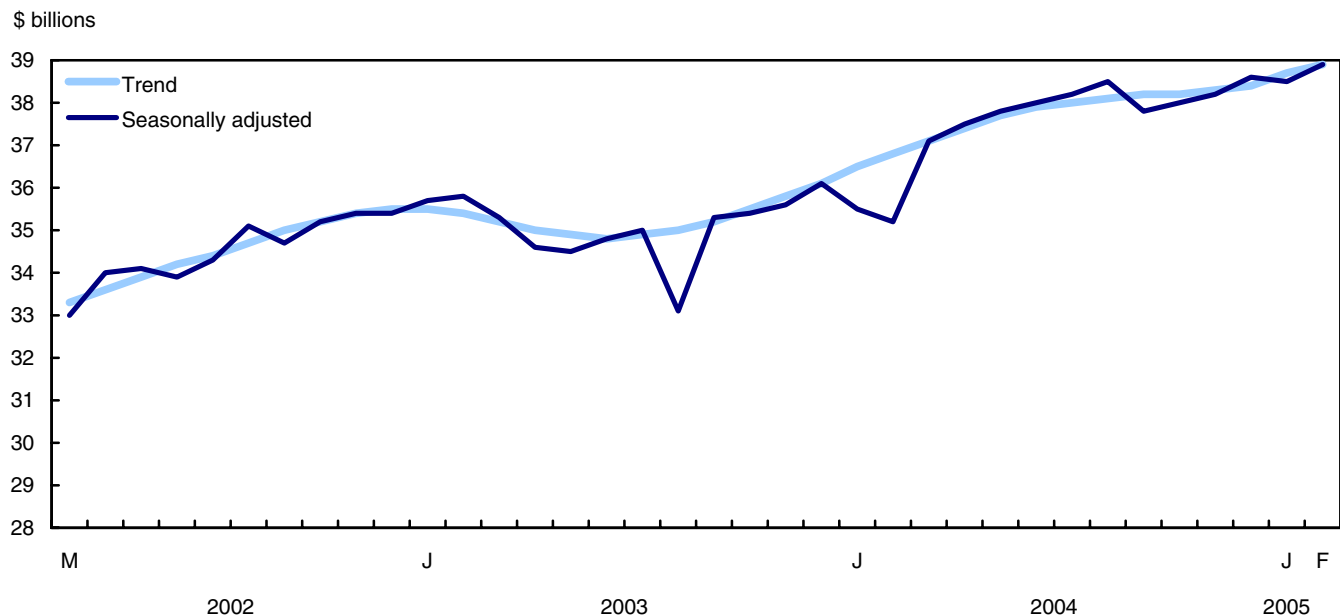
The external market boosts sales of "other products"

After declining 2.5% in January, sales of "other products" advanced 3.9% in February. This increase was attributable to some components that enjoyed strong gains, including products related to the agricultural industry (such as seed and fertilizer as well as agricultural chemical products). These sales account for approximately a quarter of this sector. External demand for these types of products, primarily in the Asian market, contributed heavily to the increase registered in this sector.

Since September 2003, sales in the "other products" sector have generally been rising, buoyed by higher prices for some of its components including agricultural chemical products and recycled metals. The prices of these goods are dictated by the world market, in which China is an ever-larger player.

Higher sales of wholesale food products

Wholesale sales of food products rose 2.6% in February. This increase completely wiped out the previous month's decrease (-1.7%). After posting generally rising sales since March 2003, this trade group has since seen its sales level off. This may be due in part to lower import prices since 2003, along with stronger competition in this sector.

Companies invest in machinery and equipment

Wholesale sales of machinery and equipment registered a second consecutive increase in February (+4.3%). This group is highly dependent on sales to the industrial production sector (manufacturing, mining and utilities). The Private and Public Investment Survey foresaw a 15% increase in investment in machinery and equipment for 2005 in the industrial production sector.

Among wholesalers, the machinery and equipment group ranks fourth in sales and first in inventories. Since September 2003, this group has seen its sales explode, partly owing to the appreciation of the dollar, which made these products (many of which are imported) less costly for Canadian purchasers.

Conversely, computer and electronic product wholesalers sold $2.6 billion worth of goods and services in February, down 2.3% from January. Between September 2003 and August 2004, wholesale sales of computers and electronic products increased after the introduction of new products and the promotion of some items (such as portable computers and cell phones). Subsequently, sales began to weaken and have had trouble making up lost ground.

Pharmaceutical wholesalers see drop in sales

Wholesale sales of pharmaceuticals declined 2.5% in February. This decrease followed a strong advance in January (+3.7%). The average monthly growth of this group, which was very strong in 2003, slowed in 2004 because of slower growth of prescriptions filled by pharmacies. In 2004, prescriptions registered their smallest increase since 1998.

The slower growth may also be due to several other factors including: new drugs coming onto the market at a slower pace than in previous years; the introduction of generally less costly generic drugs; the imposition of tighter controls on Internet sales of drugs in the US market; and the withdrawal of some popular drugs.

Prince Edward Island and Saskatchewan post strongest sales

Prince Edward Island wholesalers posted strong sales in February (+8.2%), the third rise in four months. Increases were observed in a number of sectors, including farm products and food products. For the first two months of the year, sales rose 6.4% compared to the same period in 2004.

In February, Saskatchewan wholesalers saw their first increase in sales (+17.5%) in three months. The increase was attributable to the "other products" category and the machinery and equipment group. Wholesale sales in Saskatchewan have generally been rising since March 2004, following a period of contraction that began in March 2003.

Ontario (-0.6%) was the only province where wholesale sales contracted, largely attributable to declines in the pharmaceuticals, motor vehicles parts and accessories, and household and personal products groups. Together, these three groups accounted for approximately 17% of Ontario's wholesale trade. Despite this decline, sales in Ontario were 8.4% higher in February than in the same period in 2004.

Wholesalers' inventories decline for the first time in six months

In February, wholesalers reduced their inventories for the first time in six months (-1.0%). Over the previous five months, wholesalers had increased their inventories by $2.9 billion, with the growth in inventories outpacing sales during this time. Apart from the food product and pharmaceutical groups, this build-up was widespread among

wholesalers. In particular, this was the case with the motor vehicles group, which built up $500 million in inventories during this period while its sales declined by $400 million.

Chart 2

Inventory-to-sales ratio

Ratio
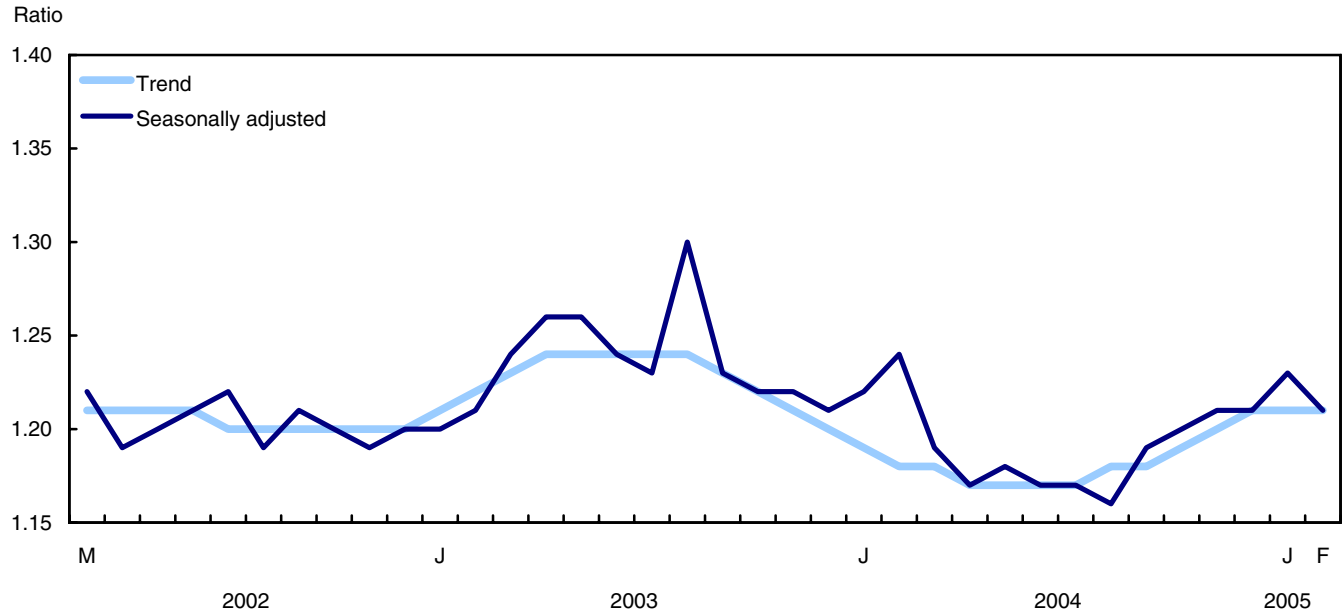
The reduction of inventories in February was mainly attributable to household and personal products, motor vehicle parts and accessories, and "other products. The trend in total inventories has generally been upward since November 2003.

The drop in inventories, combined with the robust increase in sales, pushed down the inventory-to-sales ratio to 1.21 in February, from 1.23 in January.

Chart 3

Inventories

$ billions
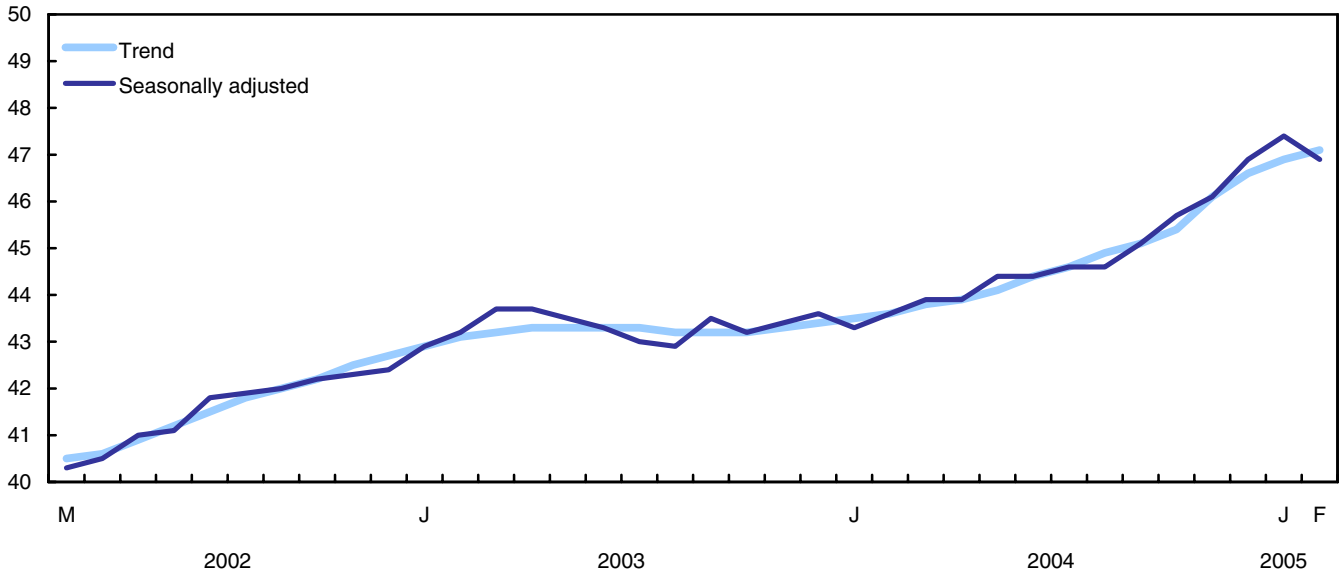
Related products

Selected CANSIM tables from Statistics Canada

081-0007	Wholesale trade, sales by trade group based on the North American Industry Classification System (NAICS)
081-0008	Wholesale trade, inventories by trade group based on the North American Industry Classification System (NAICS)
081-0009	Wholesale trade, sales in constant dollars and price index
081-0010	Wholesale trade, sales and sales trend, seasonally adjusted, by trade sector based on the North American Industry Classification System (NAICS)

Note on CANSIM

All current and historical statistics on Wholesale Trade (tables 0810007 to 0810008 and 0810010) as well as many other series are available to the public from Statistics Canada's computerized data bank CANSIM (Canadian Socio-Economic Information Management System) via terminal, on computer printouts, or in machine readable form .

For further information, please visit CANSIM.

Selected surveys from Statistics Canada

2401	Wholesale Trade Survey (Monthly)

Selected tables of Canadian statistics from Statistics Canada

- *Canadian Statistics - Wholesale merchants' sales, by industries (monthly)*

- *Canadian Statistics - Wholesale merchants' sales, by provinces and territories (monthly)*

- *Canadian Statistics - Wholesale merchants' inventories, by industries (monthly)*

- *Canadian Statistics - Wholesale merchants' sales, by industries*

- *Canadian Statistics - Wholesale merchants' sales, by provinces and territories*

- *Canadian Statistics - Wholesale merchants' inventories, by industries*

Statistical tables

Table 1-1

Wholesale merchants — Sales, by trade group and region, seasonally adjusted — Sales

	February [p] 2005	January [r] 2005	December [r] 2004	November [r] 2004	Year-to-date 2005
	millions of dollars				
Trade Group - Canada					
Farm products	495	477	479	466	973
Food products	6,538	6,370	6,480	6,435	12,908
Alcohol and tobacco	653	661	666	635	1,314
Apparel	747	746	732	712	1,493
Home and personal products	2,441	2,446	2,409	2,332	4,887
Pharmaceuticals	2,266	2,324	2,242	2,278	4,589
Motor vehicles	5,789	5,745	6,196	5,795	11,534
Motor vehicle parts and accessories	1,601	1,620	1,583	1,587	3,222
Building supplies	3,147	3,056	3,045	3,047	6,204
Metal products	1,217	1,219	1,243	1,244	2,436
Lumber and millwork	1,256	1,306	1,168	1,121	2,563
Machinery and equipment	3,681	3,529	3,427	3,522	7,210
Computers and other electronic equipment	2,583	2,645	2,500	2,705	5,228
Office and professional equipment	1,756	1,769	1,750	1,803	3,526
Other products	4,775	4,598	4,717	4,512	9,373
Total, all trade groups	**38,946**	**38,512**	**38,636**	**38,194**	**77,458**
Regions					
Newfoundland and Labrador	208	204	216	206	412
Prince Edward Island	54	50	49	50	103
Nova Scotia	526	490	483	514	1,016
New Brunswick	447	441	453	445	888
Quebec	7,564	7,503	7,461	7,482	15,067
Ontario	19,740	19,857	19,920	19,549	39,597
Manitoba	1,021	989	970	968	2,011
Saskatchewan	1,229	1,045	1,050	1,130	2,274
Alberta	4,313	4,230	4,236	4,098	8,543
British Columbia	3,807	3,674	3,767	3,725	7,481
Yukon Territory	7	7	11	9	14
Northwest Territories	29	18	18	16	47
Nunavut	2	2	2	3	4

Table 1-2

Wholesale merchants — Sales, by trade group and region, seasonally adjusted % change from previous month

	February [p] 2005	January [r] 2005	December [r] 2004	November [r] 2004
		percentage		
Trade Group - Canada				
Farm products	3.8	-0.3	2.7	2.0
Food products	2.6	-1.7	0.7	-0.3
Alcohol and tobacco	-1.2	-0.7	4.9	-5.0
Apparel	0.1	2.0	2.8	1.0
Home and personal products	-0.2	1.5	3.3	8.0
Pharmaceuticals	-2.5	3.7	-1.6	1.0
Motor vehicles	0.8	-7.3	6.9	-1.4
Motor vehicle parts and accessories	-1.2	2.3	-0.3	3.9
Building supplies	3.0	0.4	-0.1	2.0
Metal products	-0.2	-2.0	-0.1	-0.5
Lumber and millwork	-3.8	11.8	4.2	-4.5
Machinery and equipment	4.3	3.0	-2.7	0.6
Computers and other electronic equipment	-2.3	5.8	-7.6	1.2
Office and professional equipment	-0.7	1.1	-2.9	3.8
Other products	3.9	-2.5	4.5	-0.3
Total, all trade groups	**1.1**	**-0.3**	**1.2**	**0.6**
Regions				
Newfoundland and Labrador	1.6	-5.5	5.1	-0.2
Prince Edward Island	8.2	2.1	-1.8	1.4
Nova Scotia	7.4	1.4	-6.0	1.7
New Brunswick	1.3	-2.7	1.8	0.4
Quebec	0.8	0.6	-0.3	0.5
Ontario	-0.6	-0.3	1.9	0.8
Manitoba	3.3	2.0	0.2	5.5
Saskatchewan	17.5	-0.5	-7.1	6.7
Alberta	2.0	-0.1	3.4	0.1
British Columbia	3.6	-2.5	1.1	-2.6
Yukon Territory	10.8	-38.5	15.0	38.4
Northwest Territories	58.4	3.7	9.8	-3.9
Nunavut	-31.5	-6.0	-23.1	-2.3

Table 1-3

Wholesale merchants — Sales, by trade group and region, seasonally adjusted % change from previous year

	February [p] 2005	January [r] 2005	December [r] 2004	November [r] 2004	Year-to-date 2005
			percentage		
Trade Group - Canada					
Farm products	18.6	18.6	14.6	14.5	18.6
Food products	2.1	-1.2	2.1	0.1	0.5
Alcohol and tobacco	11.1	4.5	8.4	2.3	7.7
Apparel	7.1	6.4	-0.2	-2.1	6.7
Home and personal products	9.2	10.8	7.7	7.1	10.0
Pharmaceuticals	10.1	9.1	8.6	16.1	9.6
Motor vehicles	8.8	-0.5	1.6	-2.7	4.0
Motor vehicle parts and accessories	12.9	15.0	14.0	15.5	14.0
Building supplies	13.0	15.6	11.4	13.2	14.3
Metal products	27.0	41.3	45.9	45.9	33.8
Lumber and millwork	25.6	32.9	22.9	19.1	29.2
Machinery and equipment	20.3	22.4	15.2	19.2	21.3
Computers and other electronic equipment	-0.3	-0.6	-5.3	2.8	-0.5
Office and professional equipment	8.1	11.9	6.9	9.2	10.0
Other products	17.8	9.9	6.8	7.0	13.8
Total, all trade groups	**10.6**	**8.5**	**7.0**	**7.3**	**9.5**
Regions					
Newfoundland and Labrador	2.2	-3.6	-1.3	-3.9	-0.8
Prince Edward Island	9.1	3.6	4.2	6.4	6.4
Nova Scotia	3.4	-2.5	-6.8	-2.9	0.5
New Brunswick	0.9	-0.5	2.6	-0.4	0.2
Quebec	9.3	11.5	10.5	10.9	10.4
Ontario	8.4	6.0	3.6	4.3	7.2
Manitoba	10.8	11.6	10.2	10.0	11.2
Saskatchewan	43.0	14.5	13.3	13.6	28.3
Alberta	17.0	16.7	16.3	14.5	16.8
British Columbia	12.2	8.2	9.7	9.8	10.2
Yukon Territory	7.8	6.3	54.4	36.7	7.1
Northwest Territories	123.3	53.3	25.7	21.7	89.8
Nunavut	34.5	82.5	130.1	59.8	59.4

Table 2-1

Wholesale merchants — Sales, by trade group and region, not seasonally adjusted — Sales

	February [p] 2005	January [r] 2005	December 2004	November 2004	Year-to-date 2005
	millions of dollars				
Trade Group - Canada					
Farm products	474	401	452	465	875
Food products	5,707	5,696	7,077	6,461	11,403
Alcohol and tobacco	533	536	694	638	1,068
Apparel	774	564	477	679	1,338
Home and personal products	2,006	1,938	2,443	2,880	3,944
Pharmaceuticals	2,055	2,187	2,327	2,465	4,242
Motor vehicles	5,672	4,732	5,517	5,973	10,404
Motor vehicle parts and accessories	1,412	1,399	1,349	1,641	2,812
Building supplies	2,614	2,437	2,581	3,197	5,051
Metal products	1,170	1,125	1,006	1,297	2,295
Lumber and millwork	1,069	982	944	1,092	2,051
Machinery and equipment	3,175	2,907	3,339	3,390	6,082
Computers and other electronic equipment	2,336	2,389	3,117	2,799	4,724
Office and professional equipment	1,586	1,528	1,872	1,886	3,114
Other products	4,064	3,672	4,204	4,325	7,736
Total, all trade groups	**34,649**	**32,490**	**37,397**	**39,188**	**67,139**
Regions					
Newfoundland and Labrador	167	163	209	208	330
Prince Edward Island	39	35	44	45	74
Nova Scotia	416	387	500	503	803
New Brunswick	365	351	432	447	715
Quebec	6,720	6,320	7,035	7,768	13,040
Ontario	17,861	16,794	19,300	20,457	34,655
Manitoba	849	779	879	916	1,627
Saskatchewan	976	809	956	964	1,786
Alberta	3,760	3,653	4,376	4,088	7,413
British Columbia	3,456	3,178	3,641	3,766	6,635
Yukon Territory	5	4	9	9	9
Northwest Territories	35	15	15	14	50
Nunavut	1	1	2	3	2

Table 2-2

Wholesale merchants — Sales, by trade group and region, not seasonally adjusted % change from previous year

	February [p] 2005	January [r] 2005	December 2004	November 2004	Year-to-date 2005
			percentage		
Trade Group - Canada					
Farm products	19.6	13.7	16.0	18.1	16.8
Food products	0.8	-4.1	2.0	1.7	-1.7
Alcohol and tobacco	5.4	1.6	8.2	3.1	3.4
Apparel	6.8	3.2	0.5	4.8	5.3
Home and personal products	7.9	8.2	7.5	11.9	8.0
Pharmaceuticals	7.0	5.4	7.7	22.0	6.2
Motor vehicles	5.4	-3.7	3.9	-0.3	1.1
Motor vehicle parts and accessories	10.5	11.6	12.4	20.3	11.0
Building supplies	11.9	11.0	10.6	19.3	11.5
Metal products	25.5	36.3	43.5	55.9	30.6
Lumber and millwork	23.2	27.0	21.4	23.5	25.0
Machinery and equipment	20.2	17.4	13.4	25.9	18.8
Computers and other electronic equipment	-2.5	-4.9	-4.0	5.6	-3.7
Office and professional equipment	5.6	8.3	5.5	16.2	6.9
Other products	17.9	5.8	9.8	10.9	11.8
Total, all trade groups	**8.8**	**4.6**	**6.9**	**11.3**	**6.7**
Regions					
Newfoundland and Labrador	0.5	-6.7	-0.9	-0.6	-3.2
Prince Edward Island	11.1	-2.5	0.5	16.4	4.3
Nova Scotia	0.4	-6.3	-11.7	0.5	-3.0
New Brunswick	-1.7	-6.5	2.6	2.7	-4.1
Quebec	8.2	7.5	9.1	15.3	7.9
Ontario	5.9	2.1	3.8	7.8	4.0
Manitoba	10.2	6.7	10.2	12.9	8.5
Saskatchewan	43.6	10.6	13.9	21.1	26.5
Alberta	16.2	13.1	16.1	20.6	14.6
British Columbia	12.3	5.0	10.9	13.9	8.7
Yukon Territory	1.6	3.5	61.1	46.9	2.4
Northwest Territories	154.9	50.3	27.4	22.9	111.3
Nunavut	10.5	49.8	57.0	51.0	29.2

Table 3-1

Wholesale merchants — Sales (current periods) — Weighted response rate

	February p 2005	January r 2005	December 2004	November 2004
	percentage			
Trade Group - Canada				
Farm products	82.1	83.4	90.7	90.1
Food products	94.4	94.8	96.8	96.7
Alcohol and tobacco	90.7	93.7	94.5	93.3
Apparel	91.9	91.2	90.3	93.7
Home and personal products	89.6	90.8	94.0	92.9
Pharmaceuticals	97.3	99.4	98.5	98.5
Motor vehicles	79.3	97.9	97.5	97.3
Motor vehicle parts and accessories	93.9	94.0	94.4	93.8
Building supplies	89.0	92.1	94.2	93.0
Metal products	94.0	93.7	93.8	93.6
Lumber and millwork	90.6	90.8	91.2	92.3
Machinery and equipment	85.3	86.8	90.8	92.7
Computers and other electronic equipment	92.6	95.3	95.6	96.3
Office and professional equipment	87.6	88.5	90.8	89.7
Other products	90.9	90.6	92.8	92.2
Total, all trade groups	**89.3**	**93.3**	**94.8**	**94.6**
Regions				
Newfoundland and Labrador	84.2	86.1	87.2	88.0
Prince Edward Island	83.7	87.0	85.8	88.1
Nova Scotia	91.0	92.6	93.1	92.2
New Brunswick	88.9	85.8	88.5	88.0
Quebec	92.9	93.9	96.3	95.5
Ontario	87.1	93.7	94.9	95.0
Manitoba	83.9	86.8	92.1	91.6
Saskatchewan	90.5	93.2	93.6	93.9
Alberta	91.6	92.5	94.1	93.4
British Columbia	92.2	93.8	94.0	94.0
Yukon Territory	85.2	91.4	95.0	94.4
Northwest Territories	79.7	63.9	89.8	92.5
Nunavut	94.0	58.7	75.1	79.0

Table 3-2

Wholesale merchants — Sales (current periods) — Coefficient of variation

	February [p] 2005	January [r] 2005	December 2004	November 2004
	percentage			
Trade Group - Canada				
Farm products	3.2	2.9	3.4	2.2
Food products	1.9	1.9	1.8	2.0
Alcohol and tobacco	5.3	3.4	5.1	3.0
Apparel	5.3	5.5	5.1	4.9
Home and personal products	4.4	3.9	3.6	3.3
Pharmaceuticals	1.1	0.9	1.2	1.2
Motor vehicles	0.9	1.2	1.2	0.9
Motor vehicle parts and accessories	3.4	3.4	3.0	3.0
Building supplies	3.1	3.1	3.1	3.3
Metal products	3.6	3.1	3.3	3.3
Lumber and millwork	2.8	3.0	3.2	3.4
Machinery and equipment	2.1	2.3	2.1	2.2
Computers and other electronic equipment	3.3	3.4	2.1	2.6
Office and professional equipment	3.5	3.5	3.3	3.4
Other products	3.2	2.8	2.5	2.7
Total, all trade groups	**0.7**	**0.7**	**0.7**	**0.7**
Regions				
Newfoundland and Labrador	1.2	1.2	1.4	1.4
Prince Edward Island	1.4	2.0	1.8	2.1
Nova Scotia	2.2	2.3	4.5	3.1
New Brunswick	2.2	1.7	1.4	1.7
Quebec	1.8	1.7	1.9	1.7
Ontario	1.1	1.1	1.0	1.0
Manitoba	2.2	1.8	2.1	1.7
Saskatchewan	1.4	1.4	1.9	2.2
Alberta	1.3	1.5	1.3	1.3
British Columbia	2.0	2.1	1.9	2.1
Yukon Territory	0.0	0.0	0.0	0.0
Northwest Territories	0.0	0.0	0.0	0.0
Nunavut	0.0	0.0	0.0	0.0

Table 4-1

Wholesale merchants — Inventories, by trade group, seasonally adjusted — Inventories

	February [p] 2005	January [r] 2005	December [r] 2004	November [r] 2004
	millions of dollars			
Trade Group - Canada				
Farm products	160	155	149	162
Food products	4,413	4,306	4,167	4,269
Alcohol and tobacco	303	311	304	308
Apparel	1,566	1,578	1,464	1,441
Home and personal products	3,506	3,727	3,500	3,261
Pharmaceuticals	2,531	2,579	2,694	2,700
Motor vehicles	4,366	4,364	4,272	4,178
Motor vehicle parts and accessories	3,085	3,250	3,065	3,193
Building supplies	4,789	4,735	4,713	4,535
Metal products	2,351	2,339	2,462	2,398
Lumber and millwork	1,117	1,138	1,151	1,070
Machinery and equipment	8,777	8,753	8,803	8,687
Computers and other electronic equipment	1,431	1,460	1,448	1,417
Office and professional equipment	2,501	2,521	2,337	2,478
Other products	6,043	6,206	6,333	6,015
Total, all trade groups	**46,938**	**47,422**	**46,861**	**46,113**

Table 4-2

Wholesale merchants — Inventories, by trade group, seasonally adjusted % change from previous month

	February [p] 2005	January [r] 2005	December [r] 2004	November [r] 2004
	percentage			
Trade Group - Canada				
Farm products	2.9	4.3	-8.1	1.2
Food products	2.5	3.4	-2.4	-0.8
Alcohol and tobacco	-2.5	2.1	-1.1	-10.1
Apparel	-0.8	7.8	1.6	0.6
Home and personal products	-5.9	6.5	7.3	-2.5
Pharmaceuticals	-1.8	-4.3	-0.2	1.6
Motor vehicles	0.0	2.2	2.2	2.1
Motor vehicle parts and accessories	-5.1	6.0	-4.0	-0.3
Building supplies	1.1	0.5	3.9	2.3
Metal products	0.5	-5.0	2.7	3.3
Lumber and millwork	-1.8	-1.2	7.6	-5.3
Machinery and equipment	0.3	-0.6	1.3	1.9
Computers and other electronic equipment	-2.0	0.8	2.2	1.5
Office and professional equipment	-0.8	7.9	-5.7	-0.7
Other products	-2.6	-2.0	5.3	2.8
Total, all trade groups	**-1.0**	**1.2**	**1.6**	**0.9**

Table 4-3

Wholesale merchants — Inventories, by trade group, seasonally adjusted % change from previous year

	February [p] 2005	January [r] 2005	December [r] 2004	November [r] 2004
		percentage		
Trade Group - Canada				
Farm products	52.4	46.9	37.4	61.5
Food products	-6.7	-8.8	-13.6	-11.4
Alcohol and tobacco	6.2	7.4	10.7	10.0
Apparel	11.5	11.7	4.2	0.6
Home and personal products	6.7	12.9	2.8	0.7
Pharmaceuticals	9.7	9.0	15.9	21.5
Motor vehicles	5.9	6.9	8.1	1.0
Motor vehicle parts and accessories	5.1	12.6	1.1	7.6
Building supplies	8.9	7.9	7.0	4.0
Metal products	42.3	48.7	60.4	57.8
Lumber and millwork	21.8	24.6	33.6	26.4
Machinery and equipment	5.5	7.5	7.8	7.5
Computers and other electronic equipment	-8.5	-7.9	-11.6	-15.9
Office and professional equipment	2.7	5.3	-2.5	1.6
Other products	17.5	20.7	20.6	13.5
Total, all trade groups	**7.7**	**9.5**	**7.5**	**6.2**

Table 5-1

Wholesale merchants — Inventories, by trade group, not seasonally adjusted — Inventories

	February [p] 2005	January [r] 2005	December 2004	November 2004
	millions of dollars			
Trade Group - Canada				
Farm products	179	149	139	158
Food products	4,364	4,276	4,360	4,422
Alcohol and tobacco	276	283	306	303
Apparel	1,646	1,603	1,387	1,312
Home and personal products	3,491	3,521	3,401	3,453
Pharmaceuticals	2,582	2,654	2,790	2,792
Motor vehicles	4,650	4,493	4,029	4,021
Motor vehicle parts and accessories	3,143	3,122	3,066	3,091
Building supplies	4,723	4,573	4,530	4,454
Metal products	2,533	2,505	2,408	2,320
Lumber and millwork	1,223	1,170	1,097	968
Machinery and equipment	8,842	8,632	8,483	8,327
Computers and other electronic equipment	1,496	1,532	1,533	1,468
Office and professional equipment	2,489	2,484	2,401	2,481
Other products	6,328	6,400	6,069	5,591
Total, all trade groups	**47,966**	**47,397**	**45,998**	**45,161**

Table 5-2

Wholesale merchants — Inventories, by trade group, not seasonally adjusted % change from previous year

	February [p] 2005	January [r] 2005	December 2004	November 2004
	percentage			
Trade Group - Canada				
Farm products	54.7	45.4	34.2	65.4
Food products	-6.3	-9.1	-13.5	-11.4
Alcohol and tobacco	5.3	8.7	7.5	8.3
Apparel	12.3	12.5	4.1	0.3
Home and personal products	6.1	12.8	3.3	-0.5
Pharmaceuticals	8.6	9.9	15.9	23.1
Motor vehicles	5.5	7.2	7.6	0.8
Motor vehicle parts and accessories	3.6	12.7	-0.7	9.5
Building supplies	9.2	7.7	8.0	3.4
Metal products	42.5	48.4	64.3	61.5
Lumber and millwork	19.2	27.2	34.7	24.2
Machinery and equipment	5.8	7.5	8.4	7.6
Computers and other electronic equipment	-8.7	-7.6	-10.9	-16.7
Office and professional equipment	3.0	5.3	-3.0	2.2
Other products	17.5	21.8	22.5	14.8
Total, all trade groups	**7.7**	**9.9**	**7.6**	**6.1**

Table 6-1

Wholesale merchants — Inventories/sales ratio, seasonally adjusted, by trade group — Current period

	Inventories/sales ratio			
	February [p] 2005	January [r] 2005	December [r] 2004	November [r] 2004
Trade Group - Canada				
Farm products	0.32	0.33	0.31	0.35
Food products	0.67	0.68	0.64	0.66
Alcohol and tobacco	0.46	0.47	0.46	0.48
Apparel	2.10	2.12	2.00	2.03
Home and personal products	1.44	1.52	1.45	1.40
Pharmaceuticals	1.12	1.11	1.20	1.19
Motor vehicles	0.75	0.76	0.69	0.72
Motor vehicle parts and accessories	1.93	2.01	1.94	2.01
Building supplies	1.52	1.55	1.55	1.49
Metal products	1.93	1.92	1.98	1.93
Lumber and millwork	0.89	0.87	0.99	0.95
Machinery and equipment	2.38	2.48	2.57	2.47
Computers and other electronic equipment	0.55	0.55	0.58	0.52
Office and professional equipment	1.42	1.42	1.34	1.37
Other products	1.27	1.35	1.34	1.33
Total, all trade groups	**1.21**	**1.23**	**1.21**	**1.21**

Table 6-2

Wholesale merchants — Inventories/sales ratio, seasonally adjusted, by trade group — Historical

	Inventories/sales ratio			
	February 2004	January 2004	December 2003	November 2003
Trade Group - Canada				
Farm products	0.25	0.26	0.26	0.25
Food products	0.74	0.73	0.76	0.75
Alcohol and tobacco	0.49	0.46	0.45	0.45
Apparel	2.01	2.02	1.92	1.97
Home and personal products	1.47	1.50	1.52	1.49
Pharmaceuticals	1.12	1.11	1.13	1.13
Motor vehicles	0.78	0.71	0.65	0.69
Motor vehicle parts and accessories	2.07	2.05	2.18	2.16
Building supplies	1.58	1.66	1.61	1.62
Metal products	1.72	1.82	1.80	1.78
Lumber and millwork	0.92	0.93	0.91	0.90
Machinery and equipment	2.72	2.82	2.74	2.73
Computers and other electronic equipment	0.60	0.60	0.62	0.64
Office and professional equipment	1.50	1.51	1.46	1.48
Other products	1.27	1.23	1.19	1.26
Total, all trade groups	**1.24**	**1.22**	**1.21**	**1.22**

Table 7-1

Wholesale merchants — Inventories (current periods) — Weighted response rate

	February [p] 2005	January [r] 2005	December 2004	November 2004
	percentage			
Trade Group - Canada				
Farm products	59.3	54.3	71.1	53.0
Food products	85.1	85.8	89.1	88.7
Alcohol and tobacco	69.6	71.1	75.1	73.7
Apparel	73.8	75.9	78.6	71.7
Home and personal products	83.8	84.9	86.6	84.0
Pharmaceuticals	99.1	93.3	98.1	98.1
Motor vehicles	73.6	94.0	94.7	92.7
Motor vehicle parts and accessories	90.8	90.7	91.0	89.9
Building supplies	82.2	87.2	88.2	87.2
Metal products	92.9	93.1	93.0	92.7
Lumber and millwork	80.5	80.6	86.5	82.7
Machinery and equipment	78.8	80.5	88.7	86.0
Computers and other electronic equipment	87.1	90.0	88.6	88.8
Office and professional equipment	79.9	79.0	82.0	79.8
Other products	82.2	81.7	85.1	82.3
Total, all trade groups	**82.7**	**85.4**	**88.7**	**86.8**

Table 7-2

Wholesale merchants — Inventories (current periods) — Coefficient of variation

	February [p] 2005	January [r] 2005	December 2004	November 2004
	percentage			
Trade Group - Canada				
Farm products	13.8	12.6	11.8	8.7
Food products	4.2	4.2	4.1	3.8
Alcohol and tobacco	2.1	2.5	2.4	2.3
Apparel	6.2	6.7	6.7	5.9
Home and personal products	4.4	4.4	4.2	3.9
Pharmaceuticals	1.7	1.7	1.7	1.7
Motor vehicles	3.6	4.4	3.6	3.8
Motor vehicle parts and accessories	3.9	3.9	4.0	4.1
Building supplies	4.3	4.3	4.4	4.3
Metal products	2.8	2.9	3.0	2.9
Lumber and millwork	3.8	3.9	3.3	3.2
Machinery and equipment	3.2	3.0	3.1	3.1
Computers and other electronic equipment	3.2	2.9	3.4	2.7
Office and professional equipment	4.1	4.1	4.2	3.9
Other products	3.0	4.2	4.3	4.6
Total, all trade groups	**1.1**	**1.2**	**1.2**	**1.2**

Objective, uses and users

Objectives

The Monthly Wholesale Trade Survey (MWTS) provides information on the performance of the wholesale trade sector and is an important indicator of the health of the Canadian economy. In addition, the business community uses the data to analyse market performance.

Uses

The estimates provide a measure of the health and performance of the wholesale trade sector. Information collected is used to estimate level and monthly trend for wholesale sales and inventories. At the end of each year, the estimates provide a preliminary look at annual wholesale sales and performance.

Users

A variety of organizations, sector associations, and levels of government make use of the information. Wholesalers can use the survey results to compare their performance against similar types of businesses, as well as for marketing purposes. Wholesale associations are able to monitor industry performance and promote their wholesale industries. Investors can monitor industry growth, which can result in better access to investment capital by wholesalers. Governments are able to understand the role of wholesalers in the economy, which aid in the development of policies and tax incentives. As an important industry in the Canadian economy (5-6% of the Gross Domestic Product, depending on the year), governments are able to better determine the overall health of the economy through the use of the estimates in the calculation of the nation's Gross Domestic Product (GDP).

Concepts, variables and classifications

Concepts

Wholesale trade is generally the intermediate step in the distribution of merchandise. The sector comprises establishments primarily engaged in the buying and selling of merchandise and providing logistics, marketing and support services.

Wholesalers are organized to sell merchandise in large quantities to retailers, business and institutional clients. However, some wholesalers, in particular those that supply non-consumer capital goods, sell merchandise in single units to final users.

The sector recognizes two main types of wholesalers: wholesale merchants and wholesale agents and brokers.

Wholesale merchants buy and sell merchandise on their own account, that is, they take title to the goods they sell. They generally operate from warehouse or office locations and they may ship from their own inventory or arrange for the shipment of goods directly from the supplier to the client.

In addition to the sales of goods, they may provide, or arrange for the provision of, logistics, marketing and support services, such as packaging and labelling, inventory management, shipping, handling of warranty claims, in-store or co-op promotions, and product training.

Dealers of machinery and equipment, such as dealers of farm machinery and heavy-duty trucks, also fall within this category.

They are known by a variety of trade designation depending on their relationship with suppliers or customers, or the distribution method they employ. Examples include wholesale merchant, wholesale distributor, drop shipper, rack-jobbers, import-export merchants, buying groups, dealer-owned cooperatives and banner wholesalers.

For purposes of industrial classification, wholesale merchants are classified by industry according to the principal lines of commodities sold. A description of each trade group included in the accompanying statistical data is shown in Appendix I .As most businesses sell several kinds of commodities, the classification assigned to a business generally reflects either the individual commodity or the commodity group which is the primary source of the establishment's receipts, or some mixture of commodities which characterizes the establishment's business.

Wholesale Agents and Brokers buy and sell merchandise owned by others on a fee or commission basis. They do not take title to the goods they buy or sell, and they generally operate at or from an office location.

Wholesale agents and brokers are known by a variety of trade designations including import-export agents, wholesale commission agents, wholesale brokers, and manufacturer's representatives' ad agents.

Variables

Sales. Defined as the sales of all goods purchased for resale, net of returns and discounts. This includes parts used in generating repair and maintenance revenue, labour revenue from repair and maintenance, sales of goods manufactured as a secondary activity by the wholesaler, and revenue from rental and leasing of office space, other real estate, and goods and equipment.

As well, any commission revenue and fees earned from buying and selling merchandise on account of others by wholesale merchants is also included.

Other operating revenue such as operating subsidies and grants, shipping, handling, and storing goods for others are excluded.

Inventories are defined as the book value, .i.e., the value maintained in the accounting records, of all stock owned at month end and intended for resale. This includes stock in selling outlets, in warehouses, in transit, or on consignment to others. It also includes stock owned within and outside Canada.

Inventories held on consignment from others (not owned), and store and office supplies and any other supplies not to be sold are excluded.

Trading location is the physical location(s) in which business activity is conducted in each province and territory, and for which sales are credited or recognized in the financial records of the company. For wholesalers, this would normally be a distribution centre.

Current price refers to the prices prevailing during the period being referred to.

Constant price is the valuation expressed at the prices prevailing during a fixed reference or base period.

Classifications

The Monthly Wholesale Trade Survey is based on the definition of wholesale trade under the NAICS (North American Industrial Classification System). NAICS is the agreed upon common framework for the production of comparable statistics by the statistical agencies of Canada, Mexico and the United States. The agreement defines the boundaries of twenty sectors. NAICS is based on a production-oriented, or supply based conceptual framework in that establishments are groups into industries according to similarity in production processes used to produce goods and services.

Estimates appear for 15 major trade groups based on special aggregations of the 2002 North American Industrial Classification System (NAICS) industries. The 15 trade groups are further aggregated to 7 trade group sectors which correspond exactly to the 3-digit NAICS codes for wholesale trade industries, with the exception of the following: wholesale agents and brokers; and petroleum and oilseed and grain wholesaler-distributors.

Geographically, sales estimates are produced for Canada and each province and territory. Inventory estimates are produced only for Canada as a whole.

Coverage and frames

Statistics Canada's Business Register (BR) provides the frame for the Monthly Wholesale Trade Survey. The BR is a structured list of businesses engaged in the production of goods and services in Canada. It is a centrally maintained database containing detailed descriptions of most business entities operating within Canada. The BR includes all incorporated businesses, with or without employees. For unincorporated businesses, the BR includes all employer businesses, and businesses with no employees with annual sales greater than $30,000 that have a Goods and Services Tax (GST) account (the BR does not include unincorporated businesses with no employees and with annual sales less than $30,000).

The businesses on the BR are represented by a hierarchical structure with four levels, with the statistical enterprise at the top, followed by the statistical company, the statistical establishment and the statistical location. An enterprise can be linked to one or more statistical companies, a statistical company can be linked to one or more statistical establishments, and a statistical establishment to one or more statistical locations.

The target population for the MWTS consists of all statistical establishments on the BR that are classified to the wholesale sector using the North American Industry Classification System (NAICS) (approximately 110,000 establishments). The NAICS code range for wholesale sector is 410000 to 419999. A statistical establishment is the production entity or the smallest grouping of production entities which: produces a homogeneous set of goods or services; does not cross provincial/territorial boundaries; and provides data on the value of output together with the cost of principal intermediate inputs used along with the cost and quantity of labour used to produce the output. The production entity is the physical unit where the business operations are carried out. It must have a civic address and dedicated labour.

The exclusions to the target population are ancillary establishments (producers of services in support of the activity of producing goods and services for the market of more than one establishment within the enterprise, and serves as a cost centre or a discretionary expense centre for which data on all its costs including labour and depreciation can be reported by the business), future establishments, establishments with a zero gross business income (GBI) value on the BR and establishments in the following non-covered NAICS:

– 41112 (oilseed and grain)

– 412 (petroleum products)

– 419 (agents and brokers)

Sampling

The MWTS sample consists of 8,000 groups of establishments (clusters) classified to the Wholesale Trade sector selected from the Statistics Canada Business Register. A cluster of establishments is defined as all establishments belonging to a statistical enterprise that are in the same industrial group and geographical region. The MWTS uses a stratified design with simple random sample selection in each stratum. The stratification is done by trade group groups using the NAICS-four digit level, and the geographical regions consisting of the provinces and territories. We further stratify the population by size. The size measure is created using a combination of independent survey data and three administrative variables: the GBI, the GST sales, and the T2-revenue (from corporation tax return).

The size strata consist of one take-all (census), at most two take-some (partially sampled) strata, and one take-none (none sampled) stratum. Take-none strata serve to reduce respondent burden by excluding the smaller businesses from the surveyed population. These businesses should represent at most five percent of total sales. Instead of sending questionnaires to these businesses, the estimates are produced through the use of administrative data.

The sample was allocated optimally in order to reach target coefficients of variation at the national, provincial/territorial, industrial, and trade group by province/territory levels. The sample was also inflated to compensate for dead, non-responding, and misclassified units.

MWTS is a repeated survey with maximization of monthly sample overlap. The sample is kept month after month and every month births are added to the sample and dead units are identified. MWTS births, i.e., new clusters of establishment(s), are identified every month via the BR's latest universe. They are stratified according to the same criteria as the initial population. A sample of these births is selected according to the sampling fraction of the stratum to which they belong and is added to the monthly sample. Deaths also occur on a monthly basis. A death can be a cluster of establishment(s) that have ceased their activities (out-of-business) or whose major activities are no longer in wholesale trade (out-of-scope). The status of these businesses is updated on the BR using administrative sources and survey feedback, including feedback from the MWTS. Methods to treat dead units and misclassified units are part of the sample and population update procedures.

Questionnaire design

The questionnaire collects monthly data on wholesale sales and the number of trading locations by province or territory and inventories of goods owned and intended for resale from a sample of wholesalers. For the 2004 redesign, most questionnaires were subject to cosmetic changes only, with the exception of the inclusion of Nunavut. The modifications were discussed with stakeholders and the respondents were given an opportunity to comment before the new questionnaire was finalized. If further changes are needed to any of the questionnaires, proposed changes would go through a review committee, and a field test with respondents and data users to ensure its relevancy.

Response and non-response

Despite the best efforts of survey managers and operations staff to maximize response in the MWTS, some non-response will occur. For statistical establishments to be classified as responding, the degree of partial response (where an accurate response is obtained for only some of the questions asked a respondent) must meet a minimum threshold level below which the response would be rejected and considered a unit non-response. In such an instance, the business is classified as not having responded at all.

Non-response has two effects on data: first it introduces bias in estimates when non-respondents differ from respondents in the characteristics measured; and second, it contributes to an increase in the sampling variance of estimates because the effective sample size is reduced from that originally sought.

The degree to which efforts are made to get a response from a non-respondent is based on budget and time constraints, its impact on the overall quality and the risk of non-response bias.

The main method to reduce the impact of non-response at sampling is to inflate the sample size through the use of over-sampling rates that have been determined from similar surveys.

Besides the methods to reduce the impact of non-response at sampling and collection, the non-responses to the survey that do occur are treated through imputation.

In order to measure the amount of nonresponse that occurs each month various response rates are calculated. For a given reference month, the estimation process is run at least twice (a preliminary and a revised run). Between each run, respondent data can be identified as unusable and imputed values can be corrected through respondent data. As a consequence, response rates are computed following each run of the estimation process.

For the MWTS, two types of rates are calculated. In order to assess the efficiency of the collection process, unweighted response rates are calculated. Weighted rates, using the estimation weight and the value for the variable of interest, assess the quality of estimation.

To get a better picture of the success of the collection process, another unweighted rate called the 'collection result rate' is computed. It is computed by dividing the number of respondents by the number of units that we tried to contact. Non-monthly reporters (respondents with special reporting arrangements where they do not report every month but for whom actual data is available in subsequent revisions) are excluded from both the numerator and denominator for the months where no contact is performed.

In summary, the two different response rates are calculated as follows:

Weighted rates:
Response rate (estimation) = $\dfrac{\text{Sum of weighted sales of unit with response status } i}{\text{Sum of all weighted sales}}$

where i = units that have either reported data that will be used in estimation or are converted refusals , or have reported data that has not yet been resolved for estimation.

Unweighted rates:
Response rate (collection) = $\dfrac{\text{Number of questionnaires with response status } ii}{\text{Number of questionnaires with response status } iii}$

where ii = units that have either reported data (unresolved, used or not used for estimation) or are converted refusals.

where *iii* = all of the above plus units that have refused to respond, units that were not contacted and other types of nonrespondent units.

Collection results rate = Number of questionnaires with response status *ii*
Number of questionnaires with response status *iv*

where *ii* = same as *ii* defined above

where *iv* = same as *iii* except for the exclusion of units that were not contacted because their response is unavailable for a particular month since they are non-monthly reporters.

The response rate (collection) is basically the percentage of questionnaires collected over all in-scope questionnaires while the collection results rate is the percentage of questionnaires collected over all in-scope questionnaires for which an attempt to collect was performed. All the above rates are provided at the trade group, geography and size group level as well as for any combination of these levels.

Methods used to reduce non-response at collection

Significant effort is spent trying to minimize non-response during collection. Methods used, among others, are interviewer techniques such as probing and persuasion, repeated re-scheduling and call-backs to obtain the information, and procedures dealing with how to handle non-compliant (refusal) respondents.

If data are unavailable at the time of collection, a respondent's best estimates are also accepted, and are subsequently revised once the actual data become available.

To minimize total non-response for all variables, partial responses are accepted. In addition, questionnaires are customized for the collection of certain variables, such as inventory, so that collection is timed for those months when the data are available.

Finally, to build trust and rapport between the interviewers and respondents, cases are generally assigned to the same interviewer each month. This action establishes a personal relationship between interviewer and respondent, and builds respondent trust.

Data collection and capture operations

Collection of the data is performed by Statistics Canada's Regional Offices. Respondents are sent a questionnaire or are contacted by telephone to obtain their sales and inventory values, as well as to confirm the opening or closing of business trading locations. There is also follow-up of non-response. Collection of the data begins approximately 7 working days after the end of the reference month and continues for the duration of that month.

New entrants to the survey are introduced to the survey via an introductory letter that informs the respondent that a representative of Statistics Canada will be calling. This call is to introduce the respondent to the survey, confirm the respondent's business activity, establish and begin data collection, as well as to answer any questions that the respondent may have.

Editing

Data editing is the application of checks to detect missing, invalid or inconsistent entries or to point to data records that are potentially in error. In the survey process for the MWTS, data editing is done at two different time periods.

First of all, editing is done during data collection. Once data are collected via the telephone, or via the receipt of completed mail-in questionnaires, the data are captured using customized data capture applications. All data are subjected to data editing. Edits during data collection are referred to as field edits and generally consist of validity and some simple consistency edits. They are also used to detect mistakes made during the interview by the respondent or the interviewer and to identify missing information during collection in order to reduce the need for follow-up later on. Another purpose of the field edits is to clean up responses. In the MWTS, the current month's responses are edited against the respondent's previous month's responses and/or the previous year's responses for the current month.. Field edits are used to identify problems with data collection procedures and the design of the questionnaire, as well as the need for more interviewer training.

Follow-up with respondents occurs to validate potential erroneous data following any failed preliminary edit check of the data. Once validated, the collected data is regularly transmitted to the head office in Ottawa.

Secondly, editing known as statistical editing is also done after data collection and this is more empirical in nature. Statistical editing is run prior to imputation in order to identify the data that will be used as a basis to impute non-respondents. Large outliers that could disrupt a monthly trend are excluded from trend calculations by the statistical edits. It should be noted that adjustments are not made at this stage to correct the reported outliers.

The first step in the statistical editing is to identify which responses will be subjected to the statistical edit rules. Reported data for the current reference month will go through various edit checks.

The first set of edit checks is based on the Hidiroglou-Berthelot method whereby a ratio of the respondent's current month data over historical (i.e. last month, or same month last year) or administrative (i.e. GST sales or GBI) data is analyzed. When the respondent's ratio differs significantly from ratios of respondents who are similar in terms of trade group and/or geography group, the response is deemed an outlier.

The second set of edits consists of an edit known as the share of market edit. With this method, one is able to edit all respondents even those where historical and auxiliary data is unavailable. The method relies on current month data only. Therefore, within a group of respondents that are similar in terms of trade group and/or geography, if the weighted contribution of a respondent to the group's total is too large, it will be flagged as an outlier.

For edit checks based on the Hidiroglou-Berthelot method, data that are flagged as an outlier will not be included in the imputation models (those based on ratios). Also, data that are flagged as outliers in the share of market edit will not be included in the imputation models where means and medians are calculated to impute for responses that have no historical responses.

Imputation

Imputation in the MWTS is the process used to assign replacement values for missing data. This is done by assigning values when they are missing on the record being edited to ensure that estimates are of high quality and that a plausible, internal consistency is created. Due to concerns of response burden, cost and timeliness, it is generally impossible to do all follow-ups with the respondents in order to resolve missing responses. Since it is desirable to produce a complete and consistent micro data file, imputation is used to handle the remaining missing cases.

In the MWTS, imputation for missing values can be based on either historical or administrative data. The appropriate method is selected according to a strategy that is based on whether historical data is available, administrative data is available and/or which reference month is being processed.

There are three types of historical imputation methods. The first type is a general trend that uses one historical data source (previous month, data from next month or data from same month previous year). The second type is a regression model where data from previous month and same month previous year are used simultaneously. The third type uses the historical data as a direct replacement value for a non-respondent. Depending upon the particular reference month, there is an order of preference that exists so that a top quality imputation can result. The historical imputation method that was labelled as the third type above is always the last option in the order for each reference month.

The imputation methods using administrative data are automatically selected when historical information is unavailable for a non-respondent. The administrative data source (annual GST sales) is the basis of these methods. The annual GST sales are used for two types of methods. One is a general trend that will be used for simple structure, e.g. enterprises with only one establishment, and a second type is called median-average that is used for units with a more complex structure.

Estimation

Estimation is a process that approximates unknown population parameters using only the part of the population that is included in a sample. Inferences about these unknown parameters are then made, using the sample data and associated survey design.

In the MWTS, new estimation processes have been developed using Statistics Canada's Generalized Estimation System (GES), addressing the need to deal with influential units and allowing for implementation of special corrections during processing. Different methodologies have been put in place to estimate wholesale sales and inventories.

For wholesale sales, the population is divided into a survey portion (take-all and take-some strata) and a non-survey portion (take-none stratum). From the sample that is drawn from the survey portion, an estimate for the population is determined through the use of a Horvitz-Thompson estimator where responses for sales are weighted by using the inverses of the inclusion probabilities of the sampled units. Such weights (called sampling weights) can be interpreted as the number of times that each sampled unit should be replicated to represent the entire population. The calculated weighted sales values are summed by domain, to produce the total sales estimates by each industrial trade group / geographic area combination. A domain is defined as the most recent classification values available from the BR for the unit and the survey reference period. These domains may differ from the original sampling strata because units may have changed size, trade group or location. Changes in classification are reflected immediately in the estimates and do not accumulate over time. For the non-survey portion, a ratio type estimator is calculated using auxiliary data. The estimate of the total wholesale sales is equal to the sum of the survey and non-survey portion estimates.

For wholesale inventories, the sample selected for estimating sales is used to derive an estimate through the use of a Horvitz-Thompson estimator for the survey portion. A sample-based ratio is then used to produce the estimate for the non-survey portion, and the estimate of the total is derived as the sum of the survey and non-survey portion estimates.

The measure of precision used for the MWTS to evaluate the quality of a population parameter estimate and to obtain valid inferences is the variance. The variance from the survey portion is derived directly from a stratified simple random sample without replacement.

Sample estimates may differ from the expected value of the estimates. However, since the estimate is based on a probability sample, the variability of the sample estimate with respect to its expected value can be measured. The variance of an estimate is a measure of the precision of the sample estimate and is defined as the average, over all possible samples, of the squared difference of the estimate from its expected value.

Seasonal adjustment and trend cycle estimation

Revisions in the raw data are required to correct known non-sampling errors. These normally include replacing imputed data with reported data, corrections to previously reported data, and estimates for new births that were not known at the time of the original estimates.

Raw data are revised, on a monthly basis, for the month immediately prior to the current reference month being published. That is, when data for December are being published for the first time, there will also be revisions, if necessary, to the raw data for November. In addition, revisions are made once a year, with the initial release of the February data, for all months in the previous year. The purpose is to correct any significant problems that have been found that apply for an extended period. The actual period of revision depends on the nature of the problem identified, but rarely exceeds three years.

Wholesale trade data are seasonally adjusted using the X11ARIMA/2000[1] model. This consists of extrapolating a year's worth of raw data with the ARIMA model (auto-regressive integrated moving average model), and of seasonally adjusting the raw time series.

Socio-economic time series such as data from the MWTS can be broken down into five main components: the trend-cycle, seasonality, the trading-day effect, the Easter holiday effect and the irregular component.

The trend represents the long-term change in the series, whereas the cycle represents a smooth, quasi-periodical movement about the trend, showing a succession of growth and decline phases (e.g., the business cycle). These two components—the trend and the cycle—are estimated together, and the trend-cycle reflects the fundamental evolution of the series. The other components reflect short-term transient movements.

The seasonal component represents sub-annual, monthly or quarterly fluctuations that recur more or less regularly from one year to the next. Seasonal variations are caused by the direct and indirect effects of the climatic seasons, institutional factors (attributable to social conventions or administrative rules; e.g., Christmas) and technological factors.

The trading day component originates from the fact that the relative importance of the days varies systematically within the week and that the number of each day of the week in a given month or a given quarter varies from year to year. This effect is present when activity varies with the day of the week. For instance, Sunday is typically less active than the other days, and the number of Sundays, Mondays, etc. in, say, July changes from year to year.

The Easter holiday effect is the variation due to the shift of part of April's activity to March when Easter falls in March rather than April.

Lastly, the irregular component includes all other more or less erratic fluctuations not taken into account in the preceding components. It is a residual that includes errors of measurement on the variable itself as well as unusual events (e.g., strikes, drought, floods or other unexpected events causing variations in respondents' commercial activities).

Thus, the latter four components—seasonal, irregular, trading day and Easter holiday effect—all conceal the fundamental trend-cycle component of the series. Seasonal adjustment (correction of seasonal variation) consists in removing the seasonal, trading day and Easter holiday effect components from the series, and it thus helps reveal the trend-cycle. However, one must bear in mind that the seasonally adjusted series contains not only the trend-cycle but also the irregular component (which is technically difficult to isolate for the current months).

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1. Ladiray, D. and Quenneville, B. (2001). *Seasonal Adjustment with the X-11 Method.* New York: Springer-Verlag, Lecture Notes in Statistics #158.

The X-11 method is used for analysing monthly and quarterly series. It is based on an iterative principle applied in estimating the different components, with estimation being done at each stage using adequate moving averages.[2] The moving averages used to estimate the main components—the trend and seasonality—are primarily smoothing tools designed to eliminate any undesirable component from the series. Since moving averages react poorly to the presence of atypical values, the X-11 method includes a tool for detecting and correcting atypical points. This tool is used to clean up the series prior to seasonal adjustment.

Lastly, the trading day effect and the Easter holiday effect are components that are estimated using linear regression models, based on the irregular component. To evaluate the different components of the series, taking account of the possible presence of atypical points, X-11 proceeds iteratively: estimation of components, search for unwanted effects in the irregular component, estimation of components on a corrected series, search for unwanted effects in the irregular component, etc.

Wholesale trade forms a system of 29 series: the Canada grand total, the 15 trade group totals, and the 13 provincial/territorial totals. For non-seasonally adjusted series, the summing of the 15 trade group totals produces the grand total (Canada) for each month and is equal to the sum of the 13 provincial/territorial totals.

Unfortunately, seasonal adjustment removes the sub-annual additivity of a system of series; small discrepancies, which generally vary between -1% and 1%, are observed between the sum of the seasonally adjusted trade groups and the sum of the seasonally adjusted provinces and territories. To restore additivity, a reconciliation process is applied to the seasonally adjusted wholesale trade series. The reconciliation process operates as follows:

• The seasonally adjusted grand total for Canada is obtained "indirectly" by summing up the trade group totals, which have previously been seasonally adjusted separately. And

• the seasonally adjusted provincial and territorial totals are then reconciled so that their sum is equal to the seasonally adjusted grand total for Canada, obtained previously. The procedure is such that:

(a) the system's seasonally adjusted components are modified as little as possible in percentage,

(b) the seasonally adjusted components add up to the grand total for each month, and

(c) the seasonally adjusted monthly values add up to the yearly totals for the non-adjusted series.

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2. *For further information, see X11ARIMA version 2000, an update of the seasonal adjustment method X11ARIMA/88, developed by Estelle Bee Dagum, Time Series Research and Analysis Centre, Statistics Canada.*

Adjustment for historical series

The historical series for the MWTS begins in January 1993. The data from January 1993 to March 2004 were backcasted based on conversion coefficients from the MWTS on a 1980 SIC basis. Before the first release of the redesigned MWTS results for the April 2004 reference month, estimates were produced from December 2003 on to establish a comparison basis between the old and the new survey. The backcasted series were adjusted to the level of the redesigned survey.

In the first phase, the backcasted series were benchmarked beginning in January 1993. To do so, individual ratios of series from the new survey were calculated. These ratios were then applied to the backcasted series.

This benchmarking removes the additivity to the system of series because the series are benchmarked individually. For example, this process brings forth differences between the sum of the trade group and the sum of the provinces and territories. To restore additivity, a reconciliation process is applied to the benchmarked series.

Data quality evaluation

The methodology of this survey has been designed to control errors and to reduce their potential effects on estimates. However, the survey results remain subject to errors, of which sampling error is only one component of the total survey error. Sampling error results when observations are made only on a sample and not on the entire population. All other errors arising from the various phases of a survey are referred to as non-sampling errors. For example, these types of errors can occur when a respondent provides incorrect information or does not answer certain questions; when a unit in the target population is omitted or covered more than once; when a unit that is out of scope for the survey is included by mistake or when errors occur in data processing, such as coding or capture errors. While the impact of non-sampling errors is difficult to evaluate, certain measures such as response and imputation rates can be used as indicators of the potential level of non-sampling error.

Prior to publication, combined survey results are analyzed for comparability; in general, this includes a detailed review of individual responses (especially for large businesses), general economic conditions and historical trends.

A common measure of data quality for surveys is the coefficient of variation (CV). The coefficient of variation, defined as the standard error divided by the sample estimate, is a measure of precision in relative terms. Since the coefficient of variation is calculated from responses of individual units, it also measures some non-sampling errors.

The formula used to calculate coefficients of variation (CV) as percentages is:

$$CV(X) = \frac{S(X)}{X} * 100\%$$

where X denotes the estimate and S(X) denotes the standard error of X.

Confidence intervals can be constructed around the estimates using the estimate and the CV. Thus, for our sample, it is possible to state with a given level of confidence that the expected value will fall within the confidence interval constructed around the estimate. For example, if an estimate of $12,000,000 has a CV of 2%, the standard error will be $240,000 (the estimate multiplied by the CV). It can be stated with 68% confidence that the expected values will fall within the interval whose length equals the standard deviation about the estimate, i.e. between $11,760,000 and $12,240,000. Alternatively, it can be stated with 95% confidence that the expected value will fall within the interval whose length equals two standard deviations about the estimate, i.e. between $11,520,000 and $12,480,000.

Finally, due to the small contribution of the non-survey portion to the total estimates, bias in the non-survey portion has a negligible impact on the CVs. Therefore, the CV from the survey portion is used for the total estimate that is the summation of estimates from the surveyed and non-surveyed portions.

Disclosure control

Statistics Canada is prohibited by law from releasing any data which would divulge information obtained under the Statistics Act that relates to any identifiable person, business or organization without the prior knowledge or the consent in writing of that person, business or organization. Various confidentially rules are applied to all data that are released or published to prevent the publication or disclosure of any information deemed confidential. If necessary, data are suppressed to prevent direct or residual disclosure or identifiable data.

Confidentiality analysis includes the detection of possible "direct disclosure", which occurs when the value in a tabulation cell is composed of a few respondents or when the cell is dominated by a few companies.

Data comparability

In June 2004, estimates based on the 2002 North American Industrial Classification System (NAICS) were released. This followed a parallel production of four months where both NAICS and 1980 Standard Industrial Classification based estimates were generated for internal analysis. The change in classification and the new sample indicated a change in the level of the estimates. To avoid a break in the series, wholesale estimates were adjusted at the trade group by province/territory level back to January 1993.

Caution should be taken when comparing annualized monthly totals from the Monthly Wholesale Trade Survey to the estimates from the Annual Wholesale Trade Survey. Differences may result from sampling differences; conceptual and coverage differences (such as the inclusion of oilseed and grain and petroleum wholesaler-distributors and wholesale agents and brokers in the Annual Wholesale Trade Survey estimates and their exclusion from the Monthly Wholesale Trade Survey estimates); the timing of revisions within the two survey processes; the reporting period covered (fiscal or calendar year); different response rates to the two surveys; and how revenues are reported.

Each year, effort is made to evaluate the differences and correct known discrepancies in the data. However, benchmarking of the two surveys is not done.

Appendix I

Special aggregation: Wholesale trade

Based on the North American Industry Classification System (NAICS) 2002

M   **Farm Products**[1]

010   **Farm Products**
41111   Live Animal Wholesaler-Distributors
41112   Oilseed and Grain Wholesaler-Distributors (Not in scope for Monthly)
41113   Nursery Stock and Plant Wholesaler-Distributors
41119   Other Farm Product Wholesaler-Distributors

N   **Petroleum Products (Not in scope for Monthly)**

020   **Petroleum Products**
41211   Petroleum Product Wholesaler-Distributors

O   **Food, Beverage and Tobacco products**

030   **Food products**
41311   General-Line Food Wholesaler-Distributors
41312   Dairy and Milk Products Wholesaler-Distributors
41313   Poultry and Egg Wholesaler-Distributors
41314   Fish and Seafood Product Wholesaler-Distributors
41315   Fresh Fruit and Vegetable Wholesaler-Distributors
41316   Red Meat and Meat Product Wholesaler-Distributors
41319   Other Specialty-Line Food Wholesaler-Distributors
41321   Non-Alcoholic Beverage Wholesaler-Distributors

040   **Alcohol and Tobacco**
41322   Alcoholic Beverage Wholesaler-Distributors
41331   Cigarette and Tobacco Product Wholesaler-Distributors

P   **Personal and Household Goods**

050   **Apparel**
41411   Clothing and Clothing Accessories Wholesaler-Distributors
41412   Footwear Wholesaler-Distributors
41413   Piece Goods, Notions and Other Dry Goods Wholesaler-Distributors

060   **Home and Personal Products**
41421   Home Entertainment Equipment Wholesaler-Distributors
41422   Household Appliance Wholesaler-Distributors
41431   China, Glassware, Crockery and Pottery Wholesaler-Distributors
41432   Floor Covering Wholesaler-Distributors
41433   Linen, Drapery and Other Textile Furnishings Wholesaler-Distributors
41439   Other Home Furnishings Wholesaler-Distributors
41441   Jewellery and Watch Wholesaler-Distributors
41442   Book, Periodical and Newspaper Wholesaler-Distributors
41443   Photographic Equipment and Supplies Wholesaler-Distributors

41444   Sound Recording Wholesalers
41445   Video Cassette Wholesalers
41446   Toy and Hobby Goods Wholesaler-Distributors
41447   Amusement and Sporting Goods Wholesaler-Distributors

41841   Chemical (except Agricultural) and Allied Product Wholesaler-Distributors
41891   Log and Wood Chip Wholesaler-Distributors
41892   Mineral, Ore and Precious Metal Wholesaler-Distributors
41893   Second-Hand Goods (except Machinery and Automotive) Wholesaler-Distributors
41899   All Other Wholesaler-Distributors

U   Agents and Brokers

170   Agents and Brokers (Not in scope for Monthly)
41911   Farm Product Agents and Brokers
41912   Petroleum Product Agents and Brokers
41913   Food, Beverage and Tobacco Agents and Brokers
41914   Personal and Household Goods Agents and Brokers
41915   Motor Vehicle and Parts Agents and Brokers
41916   Building Material and Supplies Agents and Brokers
41917   Machinery, Equipment and Supplies Agents and Brokers
41919   Other Wholesale Agents and Brokers