Wholesale Trade

September 2009

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Wholesale Trade

September 2009

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Symbols

The following standard symbols are used in Statistics Canada publications:

.   not available for any reference period

..   not available for a specific reference period

...   not applicable

0   true zero or a value rounded to zero

0s   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

Note to users

Figures may not add up to totals because of rounding.

Acknowledgements

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Table of contents

Table of contents – continued

Appendix

Charts

Highlights

- Wholesale sales in current dollars edged up 0.2% in September, following a 1.5% decline in August. Higher sales in the machinery and electronic equipment sector, and the food, beverages and tobacco products sector offset weaker sales in the automotive products sector. Sales excluding the automotive products sector rose 0.6%.

Analysis — September 2009

Wholesale sales in current dollars edged up 0.2% in September, following a 1.5% decline in August. Higher sales in the machinery and electronic equipment sector, and the food, beverages and tobacco products sector offset weaker sales in the automotive products sector. Sales excluding the automotive products sector rose 0.6%.

Chart 1
Wholesale sales

billions of dollars
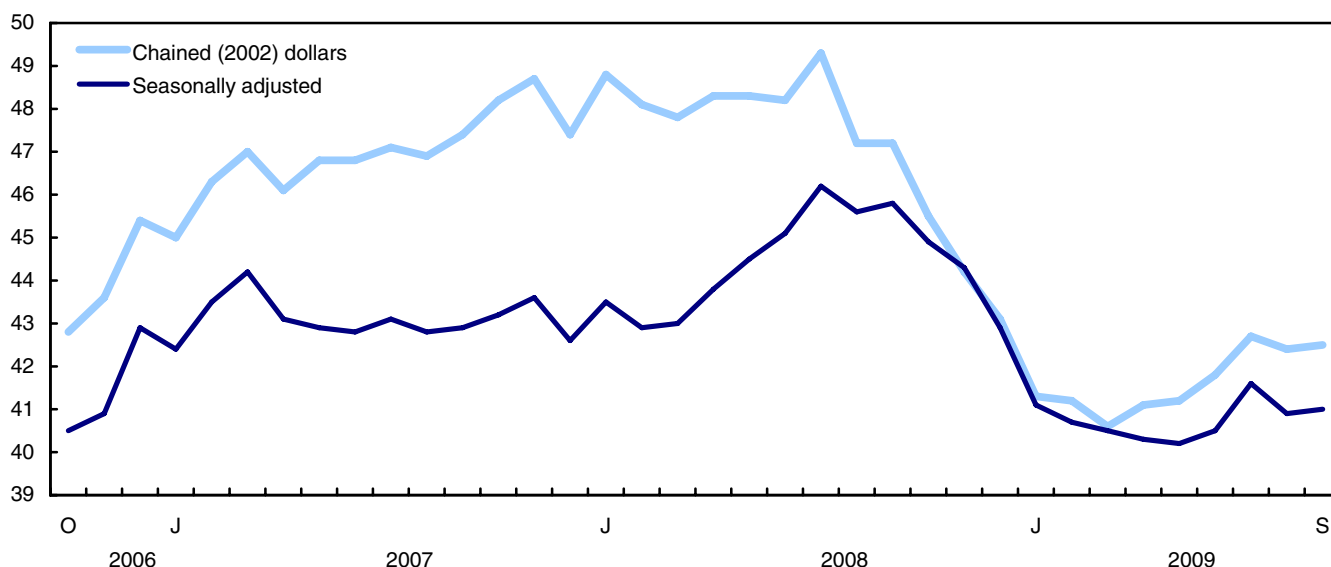
In volume terms, wholesale sales were up 0.3% in September.

Overall, four of the seven sectors, accounting for two-thirds of total wholesale sales, increased in September.

The largest increase came in the machinery and electronic equipment sector, which rose 1.2% in September. Following a 7.2% decline in August, the machinery and equipment trade group, which accounts for close to half of the total sector, rose 4.7%. This was the second increase in 10 months. The computer and other electronic equipment, and office and professional equipment trade groups both declined.

The food, beverage and tobacco products sector rose 1.0% in September, solely based on the strength of the food products trade group.

Sales in the automotive products sector fell 1.9% in September. A 2.0% drop in the sales of motor vehicles was behind most of the decrease. The decline in motor vehicle sales reflects weaker imports of trucks, which fell 31.5%, according to the latest international merchandise trade data. Motor vehicle parts and accessories fell 1.5%, posting its first decline in five months.

Ontario accounts for most of total sales increase

Following a 2.2% decline in August, wholesalers in Ontario reported increased sales in September. The province, which accounts for about half of Canada's total wholesale sales, saw an increase of 1.2%. Higher sales in the "other products," (which includes agricultural fertilizers and supplies, chemicals, recycled materials, paper products and other wholesalers) and the food, beverages and tobacco products sectors were major factors contributing to this increase.

> **Note to readers**
>
> Wholesale sales in volume terms are calculated by deflating current dollar values using import and industry product price indexes. Since many of the goods sold by wholesalers are imported, fluctuations in the value of the Canadian dollar can have an important influence on the prices of goods bought and sold by wholesalers.
>
> The wholesale sales series in chained (2002) dollars is a chained Fisher volume index with 2002 as the reference year.

In Quebec (-0.8%), sales fell for the second straight month. The automotive products and personal and household goods sectors accounted for most of the decline.

Wholesale sales fell in all four western provinces, with the largest declines in Saskatchewan (-4.1%) and Manitoba (-3.4%). In Saskatchewan, lower sales in agricultural chemical and other farm supplies was a major contributor to the decline. In Manitoba, much of the decrease can be attributed to lower sales in the "other products" sector.

Inventories continue to fall

Wholesale inventories fell 0.9% to $55.0 billion in September, the seventh consecutive monthly decline.

Overall, 8 of the 15 wholesale trade groups reported lower inventory levels, with the largest decline in dollar terms in machinery and equipment, food products, and apparel. Higher inventories were seen in motor vehicle parts and accessories, and building supplies.

The increase in sales, combined with the decrease in inventories, translated into a decline in the inventory-to-sales ratio from 1.35 in August to 1.34 in September. This was the lowest level since November 2008.

The inventory-to-sales ratio is a measure of the time in months required to exhaust inventories if sales were to remain at their current level.

Chart 2
Inventory-to-sales ratio

ratio
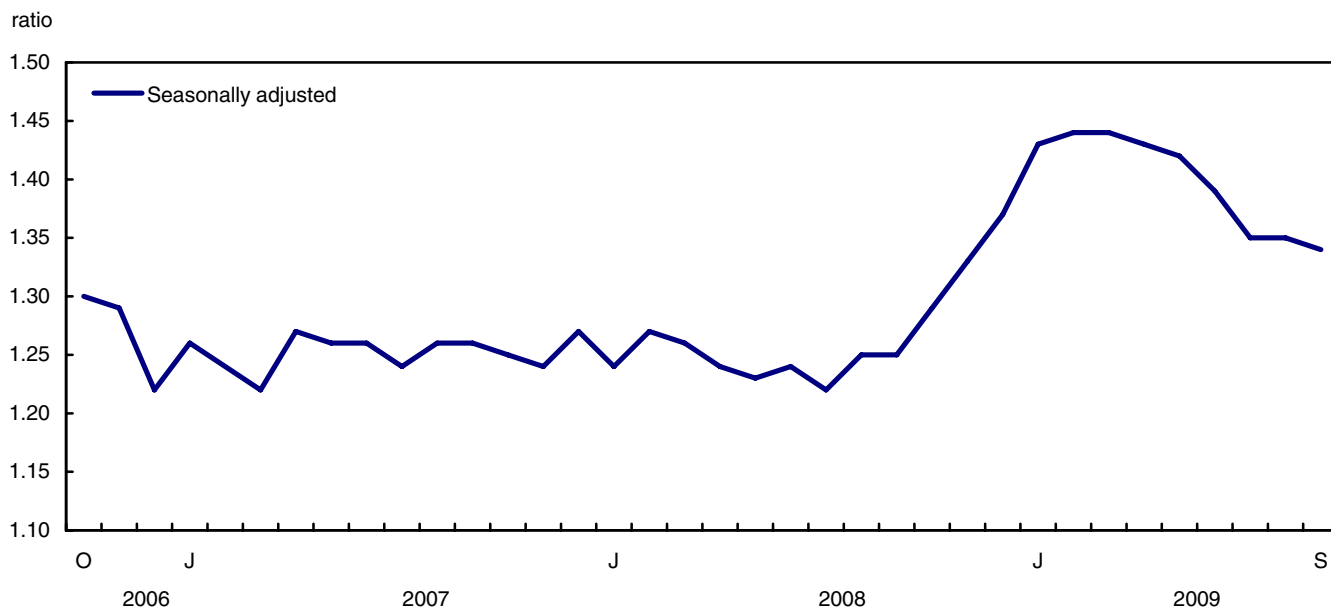
Chart 3
Inventories

billions of dollars
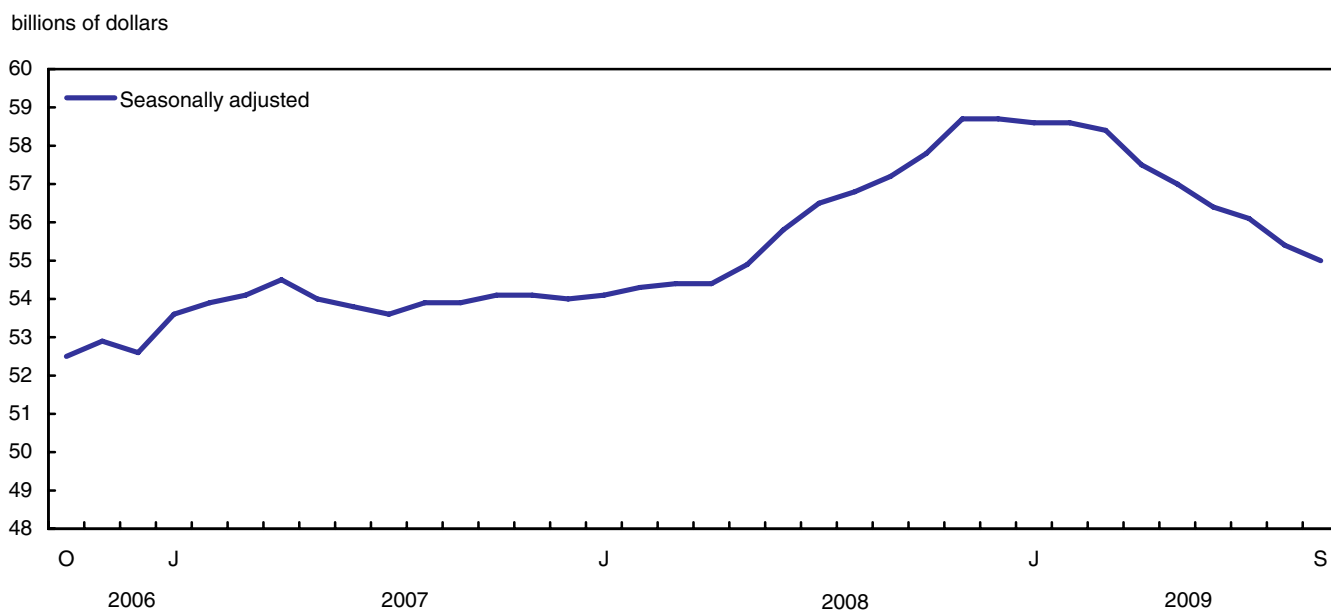
Related products

Selected technical and analytical products from Statistics Canada

11-621-M2005026	Wholesalers: A Key Link in Canada's Economy
11-621-M2006040	Between the Producer and Retailer: A Review of Wholesale Trade for 2005

Selected CANSIM tables from Statistics Canada

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

Selected surveys from Statistics Canada

2401	Wholesale Trade Survey (Monthly)

Selected summary tables from Statistics Canada

- *Wholesale merchants' sales, by industry (monthly)*

- *Wholesale merchants' sales, by province and territory (monthly)*

- *Wholesale merchants' inventories, by industry (monthly)*

- *Wholesale merchants' sales, by industry*

- *Wholesale merchants' sales, by province and territory*

- *Wholesale merchants' inventories, by industry*

Statistical tables

Table 1-1
Wholesale merchants — Sales, by trade group and region, seasonally adjusted — Sales

	September 2009 p	August 2009 r	July 2009 r	June 2009 r	Year-to-date 2009
	millions of dollars				
Trade Group - Canada					
Farm products	440	452	457	455	4,147
Food products	7,347	7,265	7,254	7,350	66,097
Alcohol and tobacco	819	821	816	845	7,251
Apparel	772	789	830	810	7,216
Home and personal products	2,644	2,669	2,611	2,632	23,592
Pharmaceuticals	3,512	3,476	3,514	3,438	30,672
Motor vehicles	4,862	4,963	5,189	4,414	38,963
Motor vehicle parts and accessories	1,595	1,620	1,601	1,565	13,998
Building supplies	3,620	3,626	3,671	3,552	32,268
Metal products	1,055	1,007	1,073	1,039	10,363
Lumber and millwork	733	734	722	720	6,539
Machinery and equipment	4,092	3,909	4,214	4,201	38,757
Computers and other electronic equipment	2,498	2,560	2,564	2,591	22,876
Office and professional equipment	2,015	2,033	2,025	2,058	18,447
Other products	5,014	5,003	5,030	4,862	45,672
Total, all trade groups	**41,019**	**40,929**	**41,571**	**40,532**	**366,859**
Regions					
Newfoundland and Labrador	276	278	284	276	2,545
Prince Edward Island	37	38	38	36	337
Nova Scotia	605	584	581	580	5,227
New Brunswick	460	456	451	453	4,045
Quebec	7,856	7,916	8,000	7,802	71,512
Ontario	20,672	20,423	20,872	19,994	179,371
Manitoba	1,088	1,126	1,134	1,078	9,974
Saskatchewan	1,262	1,317	1,238	1,304	12,353
Alberta	4,703	4,708	4,783	4,797	44,607
British Columbia	4,001	4,026	4,132	4,150	36,315
Yukon	11	11	10	12	100
Northwest Territories	47	42	42	45	420
Nunavut	3	3	4	4	54

Table 1-2
Wholesale merchants — Sales, by trade group and region, seasonally adjusted — Percentage change from previous month

	September 2009 [p]	August 2009 [r]	July 2009 [r]	June 2009 [r]
	percent			
Trade Group - Canada				
Farm products	-2.6	-1.1	0.5	-1.4
Food products	1.1	0.2	-1.3	1.5
Alcohol and tobacco	-0.2	0.7	-3.4	3.1
Apparel	-2.2	-4.9	2.5	1.6
Home and personal products	-1.0	2.2	-0.8	1.2
Pharmaceuticals	1.0	-1.1	2.2	0.5
Motor vehicles	-2.0	-4.3	17.5	5.4
Motor vehicle parts and accessories	-1.5	1.2	2.3	3.8
Building supplies	-0.2	-1.2	3.4	-0.1
Metal products	4.7	-6.2	3.3	-3.3
Lumber and millwork	-0.1	1.7	0.3	2.1
Machinery and equipment	4.7	-7.2	0.3	-2.1
Computers and other electronic equipment	-2.4	-0.2	-1.0	1.8
Office and professional equipment	-0.9	0.4	-1.6	-0.9
Other products	0.2	-0.5	3.5	-1.9
Total, all trade groups	**0.2**	**-1.5**	**2.6**	**0.7**
Regions				
Newfoundland and Labrador	-0.8	-2.3	3.0	-5.0
Prince Edward Island	-3.2	-0.8	4.5	-0.2
Nova Scotia	3.6	0.5	0.2	3.1
New Brunswick	1.0	1.1	-0.4	4.1
Quebec	-0.8	-1.0	2.5	-2.0
Ontario	1.2	-2.2	4.4	1.7
Manitoba	-3.4	-0.7	5.2	2.0
Saskatchewan	-4.1	6.4	-5.1	-1.9
Alberta	-0.1	-1.6	-0.3	-0.5
British Columbia	-0.6	-2.6	-0.4	3.1
Yukon	-8.3	10.8	-11.9	6.6
Northwest Territories	12.6	-1.9	-6.7	5.7
Nunavut	-18.8	-24.5	11.3	-42.5

Table 1-3
Wholesale merchants — Sales, by trade group and region, seasonally adjusted — Percentage change from previous year

	September 2009 ᵖ	August 2009 ʳ	July 2009 ʳ	June 2009 ʳ	Year-to-date 2009
			percent		
Trade Group - Canada					
Farm products	-6.8	-4.7	-2.9	-3.8	-0.6
Food products	2.9	2.4	5.5	4.6	5.9
Alcohol and tobacco	-3.2	2.1	0.9	-4.0	-0.5
Apparel	-6.5	-4.6	0.7	0.6	-0.7
Home and personal products	-2.8	-1.4	-7.1	-5.9	-3.9
Pharmaceuticals	8.1	7.3	8.8	6.7	7.9
Motor vehicles	-12.5	-8.3	-16.8	-26.7	-24.0
Motor vehicle parts and accessories	-6.4	5.4	-2.0	-5.0	-1.8
Building supplies	-8.6	-7.2	-7.4	-8.6	-7.5
Metal products	-37.6	-42.5	-42.6	-36.6	-28.5
Lumber and millwork	-16.6	-19.1	-21.6	-20.1	-18.5
Machinery and equipment	-22.7	-25.5	-18.2	-13.7	-12.7
Computers and other electronic equipment	-10.5	-8.3	-6.9	-5.0	-6.6
Office and professional equipment	-4.6	-2.7	-1.6	2.2	0.8
Other products	-23.3	-26.0	-23.6	-21.2	-18.6
Total, all trade groups	**-10.4**	**-10.2**	**-10.0**	**-10.1**	**-8.4**
Regions					
Newfoundland and Labrador	-3.4	-1.8	7.1	3.8	9.5
Prince Edward Island	-10.8	-6.3	-1.8	-4.4	-3.4
Nova Scotia	-1.7	-3.8	-2.7	-2.0	-1.3
New Brunswick	-5.4	-2.3	-1.1	2.0	1.1
Quebec	-9.3	-8.8	-5.2	-6.9	-4.6
Ontario	-6.5	-4.9	-9.1	-10.5	-8.6
Manitoba	-5.6	-4.5	-5.0	-5.0	-3.9
Saskatchewan	-31.7	-34.8	-35.1	-25.2	-19.5
Alberta	-21.4	-23.1	-17.9	-15.2	-12.6
British Columbia	-11.7	-12.8	-6.7	-5.8	-8.7
Yukon	-20.7	-2.3	-7.7	-10.4	-11.7
Northwest Territories	-4.9	-10.7	-28.5	-13.7	-13.0
Nunavut	-52.3	-42.0	-61.4	-55.2	9.0

Table 2-1
Wholesale merchants — Sales, by trade group and region, not seasonally adjusted — Sales

	September 2009 ᵖ	August 2009 ʳ	July 2009	June 2009	Year-to-date 2009
	millions of dollars				
Trade Group - Canada					
Farm products	458	405	384	407	4,045
Food products	7,603	7,298	7,564	7,740	65,375
Alcohol and tobacco	860	840	924	923	7,132
Apparel	960	995	901	667	7,371
Home and personal products	2,994	2,623	2,494	2,656	22,495
Pharmaceuticals	3,647	3,236	3,507	3,497	30,144
Motor vehicles	5,022	4,814	4,586	4,951	39,632
Motor vehicle parts and accessories	1,793	1,657	1,585	1,628	13,967
Building supplies	4,162	3,749	3,893	4,038	32,397
Metal products	1,166	1,015	1,057	1,085	10,406
Lumber and millwork	793	765	809	802	6,678
Machinery and equipment	4,181	3,801	4,462	4,669	38,736
Computers and other electronic equipment	2,605	2,302	2,400	2,690	22,180
Office and professional equipment	2,165	1,862	1,975	2,197	18,289
Other products	4,927	4,618	5,029	5,877	46,735
Total, all trade groups	**43,336**	**39,981**	**41,569**	**43,827**	**365,583**
Regions					
Newfoundland and Labrador	298	294	331	317	2,536
Prince Edward Island	37	35	39	52	343
Nova Scotia	650	588	630	641	5,227
New Brunswick	503	466	482	505	4,032
Quebec	8,541	7,980	8,022	8,134	71,214
Ontario	21,768	19,663	20,403	21,520	177,968
Manitoba	1,088	1,063	1,185	1,326	10,182
Saskatchewan	1,282	1,337	1,260	1,608	12,627
Alberta	4,855	4,537	4,810	5,227	44,489
British Columbia	4,246	3,961	4,336	4,430	36,386
Yukon	14	13	14	14	104
Northwest Territories	48	39	41	47	421
Nunavut	6	6	14	6	55

Table 2-2
Wholesale merchants — Sales, by trade group and region, not seasonally adjusted — Percentage change from previous year

	September 2009 p	August 2009 r	July 2009	June 2009	Year-to-date 2009
	percent				
Trade Group - Canada					
Farm products	-8.7	-3.4	-3.6	0.2	-0.8
Food products	4.9	1.9	4.5	8.3	5.7
Alcohol and tobacco	-0.3	1.2	2.8	0.1	-0.2
Apparel	-7.1	-3.1	2.2	5.6	-1.1
Home and personal products	-2.6	-0.7	-7.2	-1.7	-4.1
Pharmaceuticals	9.9	6.4	9.4	11.8	7.9
Motor vehicles	-11.7	-4.5	-11.0	-23.0	-23.5
Motor vehicle parts and accessories	-2.1	7.3	-2.7	0.7	-2.0
Building supplies	-8.0	-6.4	-7.2	-4.8	-7.6
Metal products	-35.7	-42.2	-41.5	-34.9	-28.8
Lumber and millwork	-15.1	-18.9	-18.1	-16.4	-18.5
Machinery and equipment	-20.9	-25.6	-16.7	-11.6	-12.9
Computers and other electronic equipment	-8.8	-8.2	-7.9	-0.8	-6.6
Office and professional equipment	-2.8	-2.9	-0.5	5.7	0.8
Other products	-21.4	-25.8	-21.4	-19.6	-18.7
Total, all trade groups	**-8.7**	**-9.5**	**-8.5**	**-7.2**	**-8.5**
Regions					
Newfoundland and Labrador	-1.1	-2.9	7.5	9.3	9.0
Prince Edward Island	-7.4	-4.6	0.4	-3.8	-3.9
Nova Scotia	2.1	-4.7	-1.0	-0.6	-1.6
New Brunswick	-2.4	-1.7	-0.1	5.2	1.1
Quebec	-7.2	-7.1	-4.5	-4.7	-4.6
Ontario	-4.8	-5.2	-7.1	-7.6	-8.7
Manitoba	-6.0	-2.1	-2.6	-1.5	-4.0
Saskatchewan	-28.4	-30.0	-36.1	-22.3	-20.2
Alberta	-20.5	-22.5	-16.8	-11.6	-13.0
British Columbia	-10.6	-11.7	-4.7	-2.1	-8.9
Yukon	-11.5	-9.4	-6.0	-2.3	-10.8
Northwest Territories	-9.7	-18.3	-29.2	-14.6	-14.7
Nunavut	-40.5	-24.4	-39.5	-38.2	-7.2

Table 3
Wholesale merchants — Sales (current periods) — Coefficient of variation

	September 2009 [p]	August 2009 [r]	July 2009	June 2009
	percent			
Trade Group - Canada				
Farm products	3.3	3.1	3.2	3.2
Food products	1.7	1.5	1.9	2.0
Alcohol and tobacco	1.3	1.3	1.2	1.3
Apparel	5.3	4.7	4.4	4.4
Home and personal products	3.2	3.4	3.4	3.2
Pharmaceuticals	1.2	1.1	1.0	1.0
Motor vehicles	0.9	0.7	0.9	0.8
Motor vehicle parts and accessories	3.3	3.2	3.2	3.3
Building supplies	2.7	3.0	3.2	2.8
Metal products	2.5	2.3	2.7	2.2
Lumber and millwork	6.8	5.9	5.7	5.7
Machinery and equipment	2.8	2.5	2.6	2.9
Computers and other electronic equipment	2.5	2.7	2.4	2.6
Office and professional equipment	3.9	3.9	3.9	3.6
Other products	2.7	3.0	3.3	3.4
Total, all trade groups	**0.7**	**0.7**	**0.7**	**0.8**
Regions				
Newfoundland and Labrador	1.6	1.9	1.0	1.7
Prince Edward Island	2.7	3.5	2.0	2.6
Nova Scotia	2.2	2.5	2.0	2.3
New Brunswick	1.7	1.3	1.7	2.0
Quebec	1.9	1.9	2.0	1.9
Ontario	1.0	1.0	1.1	1.2
Manitoba	2.1	2.3	2.4	1.8
Saskatchewan	2.0	2.1	2.0	3.2
Alberta	1.6	1.7	1.8	2.0
British Columbia	2.2	2.2	2.2	2.4
Yukon	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

	September 2009 [p]	August 2009 [r]	July 2009 [r]	June 2009 [r]
	millions of dollars			
Trade Group - Canada				
Farm products	169	173	175	173
Food products	4,603	4,682	4,627	4,626
Alcohol and tobacco	431	424	421	427
Apparel	1,847	1,913	1,974	1,987
Home and personal products	3,708	3,744	3,778	3,786
Pharmaceuticals	4,194	4,246	4,238	4,105
Motor vehicles	3,663	3,650	3,759	3,758
Motor vehicle parts and accessories	3,399	3,369	3,439	3,453
Building supplies	6,079	6,063	6,127	6,251
Metal products	2,610	2,599	2,728	2,829
Lumber and millwork	913	909	917	941
Machinery and equipment	12,003	12,330	12,437	12,476
Computers and other electronic equipment	1,581	1,576	1,563	1,583
Office and professional equipment	2,712	2,715	2,720	2,795
Other products	7,041	7,053	7,152	7,258
Total, all trade groups	**54,953**	**55,445**	**56,055**	**56,448**

Table 4-2
Wholesale merchants — Inventories, by trade group, seasonally adjusted — Percentage change from previous month

	September 2009 [p]	August 2009 [r]	July 2009 [r]	June 2009 [r]
	percent			
Trade Group - Canada				
Farm products	-2.2	-0.9	1.0	0.8
Food products	-1.7	1.2	0.0	-0.7
Alcohol and tobacco	1.7	0.8	-1.5	1.6
Apparel	-3.5	-3.1	-0.7	-1.4
Home and personal products	-0.9	-0.9	-0.2	-1.9
Pharmaceuticals	-1.2	0.2	3.2	0.4
Motor vehicles	0.4	-2.9	0.0	-4.9
Motor vehicle parts and accessories	0.9	-2.0	-0.4	0.6
Building supplies	0.3	-1.0	-2.0	1.0
Metal products	0.4	-4.7	-3.6	-3.9
Lumber and millwork	0.5	-0.9	-2.5	-0.3
Machinery and equipment	-2.7	-0.9	-0.3	0.0
Computers and other electronic equipment	0.3	0.8	-1.2	1.0
Office and professional equipment	-0.1	-0.2	-2.7	-2.8
Other products	-0.2	-1.4	-1.5	-1.8
Total, all trade groups	**-0.9**	**-1.1**	**-0.7**	**-0.9**

Table 4-3
Wholesale merchants — Inventories, by trade group, seasonally adjusted — Percentage change from previous year

	September 2009 [p]	August 2009 [r]	July 2009 [r]	June 2009 [r]
	percent			
Trade Group - Canada				
Farm products	-7.4	-7.7	-4.2	-5.4
Food products	2.1	4.6	2.9	4.5
Alcohol and tobacco	8.6	6.4	8.8	7.5
Apparel	-4.2	0.5	6.9	8.7
Home and personal products	-7.0	-8.8	-10.3	-9.2
Pharmaceuticals	6.7	8.6	8.2	5.3
Motor vehicles	-18.1	-18.2	-16.2	-13.2
Motor vehicle parts and accessories	3.3	3.0	4.2	3.8
Building supplies	-1.1	-0.1	1.0	4.6
Metal products	-16.6	-15.3	-9.2	-3.4
Lumber and millwork	-20.5	-20.7	-18.5	-14.0
Machinery and equipment	1.4	5.8	7.3	8.1
Computers and other electronic equipment	-13.1	-13.1	-11.8	-9.6
Office and professional equipment	-4.7	-3.9	-3.5	0.1
Other products	-7.4	-6.2	-2.0	2.0
Total, all trade groups	**-4.0**	**-2.4**	**-0.8**	**1.2**

Table 5-1
Wholesale merchants — Inventories, by trade group, not seasonally adjusted — Inventories

	September 2009 ᵖ	August 2009 ʳ	July 2009	June 2009
	millions of dollars			
Trade Group - Canada				
Farm products	182	188	182	172
Food products	4,604	4,657	4,622	4,626
Alcohol and tobacco	429	421	419	435
Apparel	1,873	2,038	2,129	2,008
Home and personal products	3,785	3,767	3,818	3,779
Pharmaceuticals	4,168	4,182	4,199	4,046
Motor vehicles	3,561	3,375	3,469	3,484
Motor vehicle parts and accessories	3,393	3,405	3,496	3,507
Building supplies	5,993	6,060	6,164	6,289
Metal products	2,598	2,634	2,741	2,818
Lumber and millwork	858	848	891	936
Machinery and equipment	11,707	12,145	12,501	12,635
Computers and other electronic equipment	1,582	1,529	1,512	1,483
Office and professional equipment	2,691	2,718	2,706	2,752
Other products	6,666	6,455	6,464	6,599
Total, all trade groups	**54,089**	**54,421**	**55,313**	**55,568**

Table 5-2
Wholesale merchants — Inventories, by trade group, not seasonally adjusted — Percentage change from previous year

	September 2009 ᵖ	August 2009 ʳ	July 2009	June 2009
	percent			
Trade Group - Canada				
Farm products	-8.3	-5.8	-2.7	-5.1
Food products	1.6	4.9	2.9	4.4
Alcohol and tobacco	7.8	5.6	7.3	8.2
Apparel	-4.9	0.3	7.1	8.9
Home and personal products	-7.8	-9.3	-10.5	-9.6
Pharmaceuticals	6.0	9.1	8.9	5.0
Motor vehicles	-18.2	-19.0	-16.5	-14.9
Motor vehicle parts and accessories	3.3	2.5	5.0	4.7
Building supplies	-2.2	-1.0	0.4	4.9
Metal products	-17.9	-16.5	-10.4	-4.1
Lumber and millwork	-20.8	-21.7	-19.4	-14.4
Machinery and equipment	0.7	5.4	7.3	8.1
Computers and other electronic equipment	-10.6	-14.0	-13.3	-10.9
Office and professional equipment	-5.1	-4.6	-4.4	-0.3
Other products	-9.0	-8.4	-4.2	0.0
Total, all trade groups	**-4.6**	**-3.0**	**-1.1**	**0.9**

Table 6-1
Wholesale merchants — Inventories/sales ratio, seasonally adjusted, by trade group — Current period

	Inventories/sales ratio			
	September 2009 [p]	August 2009 [r]	July 2009 [r]	June 2009 [r]
	percent			
Trade Group - Canada				
Farm products	0.38	0.38	0.38	0.38
Food products	0.63	0.64	0.64	0.63
Alcohol and tobacco	0.53	0.52	0.52	0.51
Apparel	2.39	2.42	2.38	2.45
Home and personal products	1.40	1.40	1.45	1.44
Pharmaceuticals	1.19	1.22	1.21	1.19
Motor vehicles	0.75	0.74	0.72	0.85
Motor vehicle parts and accessories	2.13	2.08	2.15	2.21
Building supplies	1.68	1.67	1.67	1.76
Metal products	2.47	2.58	2.54	2.72
Lumber and millwork	1.25	1.24	1.27	1.31
Machinery and equipment	2.93	3.15	2.95	2.97
Computers and other electronic equipment	0.63	0.62	0.61	0.61
Office and professional equipment	1.35	1.34	1.34	1.36
Other products	1.40	1.41	1.42	1.49
Total, all trade groups	**1.34**	**1.35**	**1.35**	**1.39**

Table 6-2
Wholesale merchants — Inventories/sales ratio, seasonally adjusted, by trade group — Historical

	Inventories/sales ratio			
	September 2008	August 2008	July 2008	June 2008
	percent			
Trade Group - Canada				
Farm products	0.39	0.40	0.39	0.39
Food products	0.63	0.63	0.65	0.63
Alcohol and tobacco	0.47	0.49	0.48	0.45
Apparel	2.33	2.30	2.24	2.27
Home and personal products	1.47	1.52	1.50	1.49
Pharmaceuticals	1.21	1.21	1.21	1.21
Motor vehicles	0.80	0.82	0.72	0.72
Motor vehicle parts and accessories	1.93	2.13	2.02	2.02
Building supplies	1.55	1.55	1.53	1.54
Metal products	1.85	1.75	1.61	1.79
Lumber and millwork	1.31	1.26	1.22	1.21
Machinery and equipment	2.24	2.22	2.25	2.37
Computers and other electronic equipment	0.65	0.65	0.64	0.64
Office and professional equipment	1.35	1.35	1.37	1.39
Other products	1.16	1.11	1.11	1.15
Total, all trade groups	**1.25**	**1.25**	**1.22**	**1.24**

Table 7
Wholesale merchants — Inventories (current periods) — Coefficient of variation

	September 2009 [p]	August 2009 [r]	July 2009	June 2009
	percent			
Trade Group - Canada				
Farm products	13.7	11.8	12.2	12.5
Food products	3.4	3.4	3.2	3.3
Alcohol and tobacco	2.8	2.7	2.7	2.5
Apparel	5.3	5.4	5.1	4.9
Home and personal products	4.5	4.5	4.4	4.4
Pharmaceuticals	1.8	1.9	2.0	1.9
Motor vehicles	2.0	2.1	1.8	2.3
Motor vehicle parts and accessories	4.0	4.2	4.2	4.3
Building supplies	4.4	4.4	4.3	4.3
Metal products	3.7	3.6	3.7	4.2
Lumber and millwork	5.4	4.3	4.5	4.6
Machinery and equipment	3.2	3.0	3.1	3.1
Computers and other electronic equipment	3.6	3.9	3.9	3.8
Office and professional equipment	4.1	4.1	4.3	4.1
Other products	3.9	3.2	3.1	3.1
Total, all trade groups	**1.1**	**1.1**	**1.1**	**1.1**

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

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 (unweighted and weighted). 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. Within each of these types of rates, there are distinct rates for units that are surveyed and for units that are only modeled from administrative data that has been extracted from GST files.

To get a better picture of the success of the collection process, two unweighted rates called the 'collection results rate' and the 'extraction results rate' are computed. They are computed by dividing the number of respondents by the number of units that we tried to contact or tried to receive extracted data for them. 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 various response rates are calculated as follows:

Weighted rates:

Survey Response rate (estimation) =
Sum of weighted sales of units with response status *i*
       Sum of survey 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.

Admin Response rate (estimation) =
$$\frac{\text{Sum of weighted sales of units with response status } ii}{\text{Sum of administrative weighted sales}}$$

where ii = units that have data that was extracted from administrative files and are usable for estimation.

Total Response rate (estimation) =
$$\frac{\text{Sum of weighted sales of units with response status } i \text{ or response status } ii}{\text{Sum of all weighted sales}}$$

Unweighted rates:

Survey Response rate (collection) =
$$\frac{\text{Number of questionnaires with response status } iii}{\text{Number of questionnaires with response status } iv}$$

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

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

Admin Response rate (extraction) =
$$\frac{\text{Number of questionnaires with response status } vi}{\text{Number of questionnaires with response status } vii}$$

where vi = in-scope units that have data (either usable or non-usable) that was extracted from administrative files

where vii = all of the above plus units that have refused to report to the adminstrative data source, units that were not contacted and other types of nonrespondent units.

(% of questionnaire collected over all in-scope questionnaires)

Collection Results Rate =
$$\frac{\text{Number of questionnaires with response status } iii}{\text{Number of questionnaires with response status } viii}$$

where iii = same as iii defined above

where $viii$ = same as iv except for the exclusion of units that were contacted because their response is unavailable for a particular month since they are non-monthly reporters.

Extraction Results Rate =
$$\frac{\text{Number of questionnaires with response status } ix}{\text{Number of questionnaires with response status } vii}$$

where ix = same as vi with the addition of extracted units that have been imputed or were out of scope

where vii = same as vii defined above

(% of questionnaires collected over all questionnaire in-scope we tried to collect)

All the above weighted and unweighted rates are provided at the trade group, geography and size group level or for any combination of these levels.

Use of Administrative Data

Managing response burden is an ongoing challenge for Statistics Canada. In an attempt to alleviate response burden and survey costs, especially for smaller businesses, Statistics Canada has been investigating various alternatives to survey taking. Administrative data files are a rich source of information for business data and Statistics Canada is working at bringing this rich data source to its full potential. As such, effective the October 2005 reference month, the MWTS has reduced the number of simple establishments in the sample that are surveyed directly and instead derives sales data for these establishments from Goods and Service Tax (GST) files using a statistical model. The model accounts for differences between sales and revenue (reported for GST purposes) as well as for the time lag between the survey reference period and the reference period of the GST file.

Inventories for establishments where sales are GST-based are derived using the MWTS imputation system. The imputation system applies to the previous month values, the month-to-month and year-to-year changes in similar establishments which are surveyed.

For more information on the methodology used for modeling sales from administrative data sources, refer to 'Monthly Wholesale Survey: Use of Administrative Data' under 'Documentation' of the IMDB.

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.

In conjunction with the statistical editing after data collection of reported data, there is also error detection done on the extracted GST data. Modeled data based on the GST are also subject to an extensive series of processing steps which thoroughly verify each record that is the basis for the model as well as the record being modeled. Edits are performed at a more aggregate level (industry by geography level) to detect records which deviate from the expected range, either by exhibiting large month-to-month change, or differing significantly from the remaining units. All data which fail these edits are subject to manual inspection and possible corrective action.

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.

Finally, it should be noted that inventories in the MWTS are also imputed from all records for which sales are derived from monthly GST data. The imputed values are calculated automatically for inventories using the same imputation methods that are in place for missing data from non-respondents.

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 nonsurvey 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 nonsurvey 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.

For more information on the methodology for modeling sales from administrative data sources (i.e. GST data) which also contributes to the estimates of the survey portion, refer to 'Monthly Wholesale Trade Survey: Use of Administrative Data' under 'Documentation' of the IMDB.

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.

Revisions and seasonal adjustment

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.

Time series contain the elements essential to the description, explanation and forecasting of the behaviour of an economic phenomenon: "They are statistical records of the evolution of economic processes through time."[1] Economic time series such as the Monthly Wholesale Trade Survey 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 and institutional factors (attributable to social conventions or administrative rules; e.g., Christmas).

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 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 a given month 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, major power blackout or other unexpected events causing variations in respondents' 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. While seasonal adjustment permits a better understanding of the underlying trend-cycle of a series, the seasonally adjusted series still contains an irregular component. Slight month-to-month variations in the seasonally adjusted series may be simple irregular movements. To get a better idea of the underlying trend, users should examine several months of the seasonally adjusted series.

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1. A Note on the Seasonal adjustment of Economic Time Series», Canadian Statistical Review, August 1974.

Since April 2008, Monthly Wholesale Trade Survey data are seasonally adjusted using the X-12-ARIMA[2] software. The technique that is used essentially consists of first correcting the initial series for all sorts of undesirable effects, such as the trading-day and the Easter holiday effects, by a module called regARIMA. These effects are estimated using regression models with ARIMA errors (auto-regressive integrated moving average models). The series can also be extrapolated for at least one year by using the model. Subsequently, the raw series—pre-adjusted and extrapolated if applicable— is seasonally adjusted by the X-11 method.

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.[3] The moving averages used to estimate the main components—the trend and seasonality—are primarily smoothing tools designed to eliminate an 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 during the seasonal adjustment. Outlying data points can also be detected and corrected in advance, within the regARIMA module.

Lastly, the annual totals of the seasonally adjusted series are forced to the annual totals of the original series.

Unfortunately, seasonal adjustment removes the sub-annual additivity of a system of series; small discrepancies can be observed between the sum of seasonally adjusted series and the *direct* seasonal adjustment of their total. To insure or restore additivity in a system of series, a reconciliation process is applied or *indirect* seasonal adjustment is used, i.e. the seasonal adjustment of a total is derived by the summation of the individually seasonally adjusted series.

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2. For more information, see X-12-ARIMA Reference Manual Version 0.3 (2007), U.S. Census Bureau.
3. Ladiray, D. and Quenneville, B. (2001). Seasonal Adjustment with the X-11 Method. New York: Springer-Verlag, Lecture Notes in Statistics #158.

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 GST data for records being modeled for a particular month are not representative of the actual record for various reasons; 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.

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

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1. Also published without NAICS 411120 Oilseed and Grain Wholesaler-Distributors as: Trade Group Sector "Aa" Farm Products (excluding oilseeds and grains), comprising Trade Group 11 Farm Products (excluding oilseeds and grain).

060	**Home and Personal Products**

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
41452 Toiletries, Cosmetics and Sundries Wholesaler-Distributors

070 **Pharmaceuticals**
41451 Pharmaceuticals and Pharmacy Supplies Wholesaler-Distributors

Q **Automotive Products**

080 **Motor Vehicles**
41511 New and Used Automobile and Light-Duty Truck Wholesaler-Distributors
41512 Truck, Truck Tractor and Bus Wholesaler-Distributors
41519 Recreational and Other Motor Vehicles Wholesaler-Distributors

090 **Motor Vehicle Parts and Accessories**
41521 Tire Wholesaler-Distributors
41529 Other New Motor Vehicle Parts and Accessories Wholesaler-Distributors
41531 Used Motor Vehicle Parts and Accessories Wholesaler-Distributors

R **Building Materials**

100 **Building Supplies**
41611 Electrical Wiring and Construction Supplies Wholesaler-Distributors
41612 Plumbing, Heating and Air-Conditioning Equipment and Supplies Wholesaler-Distributors
41631 General-Line Building Supplies Wholesaler-Distributors
41633 Hardware Wholesaler-Distributors
41634 Paint, Glass and Wallpaper Wholesaler-Distributors
41639 Other Specialty-Line Building Supplies Wholesaler-Distributors

110 **Metal Products**
41621 Metal Service Centres

120 **Lumber and Millwork**
41632 Lumber, Plywood and Millwork Wholesaler-Distributors

S   Machinery and Electronic Equipment

130   Machinery and Equipment
41711   Farm, Lawn and Garden Machinery and Equipment Wholesaler-Distributors
41721   Construction and Forestry Machinery, Equipment and Supplies Wholesaler-Distributors
41722   Mining and Oil and Gas Well Machinery, Equipment and Supplies Wholesaler-Distributors
41723   Industrial Machinery, Equipment and Supplies Wholesaler-Distributors
41799   All Other Machinery, Equipment and Supplies Wholesaler-Distributors

140   Computers and Other Electronic Equipment
41731   Computer, Computer Peripheral and Pre-Packaged Software Wholesaler-Distributors
41732   Electronic Components, Navigational and Communications Equipment and Supplies Wholesaler-Distributors

150   Office and Professional Equipment
41791   Office and Store Machinery and Equipment Wholesaler-Distributors
41792   Service Establishment Machinery, Equipment and Supplies Wholesaler-Distributors
41793   Professional Machinery, Equipment and Supplies Wholesaler-Distributors

T   Other Products

160   Other Products
41811   Recyclable Metal Wholesaler-Distributors
41812   Recyclable Paper and Paperboard Wholesaler-Distributors
41819   Other Recyclable Material Wholesaler-Distributors
41821   Stationery and Office Supplies Wholesaler-Distributors
41822   Other Paper and Disposable Plastic Product Wholesaler-Distributors
41831   Agricultural Feed Wholesaler-Distributors
41832   Seed Wholesaler-Distributors
41839   Agricultural Chemical and Other Farm Supplies 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