

# Access to Care, Health Status, and Health Disparities in the United States and Canada: Results of a Cross-National Population-Based Survey

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Canada, with a system of universal health insurance, spends about half as much on health care per capita as does the United States, yet Canadians live 2 to 3 years longer.<sup>1</sup> Few population-based data are available on health habits and processes of care in the 2 countries that might explain this paradox. Blendon et al.<sup>2</sup> found that both US residents and Canadians were dissatisfied with their health care systems, that low-income US residents reported more problems obtaining care than their peers in 4 other English-speaking countries (Australia, Canada, New Zealand, and the United Kingdom), and that quality-of-care ratings were similar in the 5 countries.<sup>3</sup> Among other studies, some,<sup>4</sup> but not all,<sup>5</sup> have found better health care quality in Canada. Socioeconomic inequalities in health, commonly perceived as pervasive in the United States, seem less stark in Canada.<sup>2,6-10</sup>

We analyzed population-based data from the recently released Joint Canada/US Survey of Health (JCUSH) to compare health status, access to care, and health care utilization in the 2 countries. We also sought to explore whether universal health insurance can mitigate disparities in health<sup>11,12</sup>—a question complicated by differences in race, poverty, and immigrant status in the 2 nations.

## METHODS

### Data Sources

The JCUSH assessed health status, disease prevalence, behavioral risk factors, health care utilization, and access to care in the 2 countries.<sup>13</sup> Conducted jointly by Statistics Canada and the US National Center for Health Statistics, the survey was administered between November 2002 and March 2003. The JCUSH was a 1-time, random telephone survey (land line only) of noninstitutionalized adults in both countries. Very-low-income

**Objectives.** We compared health status, access to care, and utilization of medical services in the United States and Canada and compared disparities according to race, income, and immigrant status.

**Methods.** We analyzed population-based data on 3505 Canadian and 5183 US adults from the Joint Canada/US Survey of Health. Controlling for gender, age, income, race, and immigrant status, we used logistic regression to analyze country as a predictor of access to care, quality of care, and satisfaction with care and as a predictor of disparities in these measures.

**Results.** In multivariate analyses, US respondents (compared with Canadians) were less likely to have a regular doctor, more likely to have unmet health needs, and more likely to forgo needed medicines. Disparities on the basis of race, income, and immigrant status were present in both countries but were more extreme in the United States.

**Conclusions.** United States residents are less able to access care than are Canadians. Universal coverage appears to reduce most disparities in access to care. (*Am J Public Health.* 2006;96:1300-1307. doi:10.2105/AJPH.2004.059402)

populations, who may be less likely to own telephones, may be undersampled. The survey content was based on the Canadian Community Health Survey and the US National Health Interview Survey. The sample included 3505 Canadians and 5183 US residents. Using the computer-assisted telephone interview method, trained interviewers administered the survey in English and French for Canadian respondents and in English and Spanish for US respondents.

The JCUSH sample was designed to produce reliable national estimates for 3 age groups (18-44, 45-64, and 65 and older) by gender, with an oversampling of persons aged 65 years and older. Population estimates were derived from the 1996 Canada Census of Population and from the October 2002 US Current Population Survey. Poststratification adjustments for nonresponse were based on age, gender, and region for Canada and age, gender, and race/ethnicity for the United States. Response rates were 69.3% and 50.2% in Canada and the United States, respectively. The response rates were calculated by multiplying the proportion of valid

telephone numbers by the cooperation rate.<sup>14</sup> The proportion of valid telephone numbers was 100% in Canada and only 80% in the United States; the cooperation rate was 69.3% in Canada and 62.7% in the United States. No information is available on the characteristics of nonrespondents. The data were released for public use in mid-2004.

**Definition of behavioral risk factors and chronic illnesses.** We used the World Health Organization (WHO) definitions of overweight (body mass index [BMI]  $\geq 25$  but  $< 30$ ) and obesity (BMI  $\geq 30$ ). We defined sedentary lifestyle as no physical activity in the past 3 months. We used the JCUSH definition of current daily smokers—individuals who reported having smoked at least 1 whole cigarette and who smoked cigarettes every day at the time of the survey. The JCUSH defined depression as a 90% or higher likelihood of having had a major depressive episode in the past year, as determined from responses to a subset of questions from the WHO 1990 Composite International Diagnostic Interview.<sup>15</sup> The JCUSH also asked respondents whether they had diabetes, asthma,

hypertension, arthritis, chronic obstructive pulmonary disease, or heart disease.

**Definition of health status measures.** The JCUSH administered the Health Utility Index<sup>16</sup> to all respondents. The index is based on the Comprehensive Health Status Measurement System<sup>17</sup> and provides a description of an individual's overall functional health on the basis of 8 attributes: vision, hearing, speech, mobility, dexterity, cognition, emotion, and pain and discomfort. The JCUSH also administered an impact-of-health scale, based on the following question: "How often does a long-term physical condition or mental condition or health problem reduce the amount or the kind of activity you can do at home, at school, at work, and in other activities, for example, transportation or leisure?" The impact-of-health scale was adapted from the WHO's International Classification of Functioning<sup>18</sup> and has been shown to have good validity and reliability (according to Andrew MacKenzie, MA, oral communication, March 2005).

**Definition of access to care and health services measures.** Respondents were considered to have an unmet health care need if they felt they had needed, but had not received, a health care service in the past year. In accordance with screening guidelines in both countries,<sup>19-22</sup> we defined women aged 18 to 65 years with an intact uterus as eligible for cervical cancer screening and women aged 50 to 69 years as eligible for mammography screening. The guidelines stipulate that eligible women receive Papanicolaou (Pap) tests every 3 years.<sup>20,22</sup> Unfortunately, for the question "When was the last time you had a Papanicolaou test," JCUSH offered response choices of: "1 year to less than 3 years ago" and "3 years to less than 5 years ago." Hence, women who had fulfilled screening guidelines by receiving a Pap test exactly 3 years ago could not be differentiated from those whose most recent Pap test was more than 3 years (but less than 5 years) ago. For this reason, we present results for Pap tests "1 year to less than 3 years ago" and "3 years to less than 5 years ago."

Guidelines in both countries also stipulate that eligible women receive mammograms every 2 years.<sup>19,21</sup> When asked the date of their last mammogram, women were offered responses including: "1 year to less than 2

years ago" and "2 years to less than 5 years ago." Because it is not possible to determine precisely which women received mammography within the recommended screening interval (2 years or less), we present results for both response categories.

Respondents also were asked to rate the quality of the physician, hospital, and community-based care they received in the past year and to rate their satisfaction with such care. The satisfaction and quality questions used in the JCUSH have not been validated, nor have they been tested for reliability.

### Statistical Methods

We used the SAS computer statistical package, Version 9.1 (SAS Institute Inc, Cary, NC). We performed  $\chi^2$  tests to compare differences in demographics, health status, and access to care between groups. In secondary analyses, we compared access to care and receipt of health services between US insured and US uninsured respondents, between US insured and all Canadian respondents, and between the US uninsured and all Canadian respondents. In analyses stratified by country, we also used the  $\chi^2$  test to compare health status, access to care, and receipt of health services between White and non-White respondents, between foreign-born and native-born respondents, and between respondents in the highest and lowest income quintiles. To derive accurate tests of statistical significance, we used SUDAAN statistical software (Research Triangle Institute, Research Triangle Park, NC; 1989), which adjusts for the survey's complex sampling design.<sup>23</sup>

We used multiple logistic regression to analyze country (United States vs Canada) as a predictor of 5 access-to-care variables (having a regular medical doctor, having contacted any medical doctor in the past 12 months, needing but not getting medicines because of cost, having unmet health care needs in the past year, and having a dental visit within the past year) and as a predictor of perceived quality of care and satisfaction with health care. In these analyses, we controlled for gender, age, income level, race, and immigrant status. Income data were missing on 32% of respondents. Because respondents without income data differed demographically from other respondents, we

treated missing values for income as a separate group in the analysis.

To detect differences between the United States and Canada in the presence of disparities on the basis of race, income, and immigrant status, we included interaction terms between country and race, immigrant status, and income, respectively. Because the interaction terms between country and immigrant status and between country and income were statistically significant in many of the logistic regression models, we present data in multivariate logistic regression models stratified by country.

## RESULTS

### Demographic Characteristics, Behavioral Risk Factors, and Health Status

The demographic characteristics of respondents, according to country of residence, are shown in Table 1. The study population was representative of 206 million US adults and 24 million Canadian adults residing in households during 2002. United States residents were more likely to be non-White and native-born than were Canadians. United States residents had, on average, higher incomes and greater relative poverty rates (the proportion of respondents with income less than 60% of the median income) than did Canadians. With the important exception of having lower rates of cigarette smoking, US respondents were less healthy than Canadians, with higher rates of obesity, physical inactivity, diabetes, hypertension, arthritis, and chronic obstructive pulmonary disease (Table 2).

### Access to Care, Receipt of Health Services, and Perceived Quality and Satisfaction

Table 2 also shows responses regarding access to care, receipt of health services, and perceived quality and satisfaction in the 2 countries. In unadjusted analyses, fewer US residents than Canadians had a regular medical doctor. United States residents were more likely to have forgone needed medicines in the past year. Compared with Canadian women, US women had higher Pap test rates (at both 3- and 5-year intervals). US women reported higher rates of mammography screening "within less than 2 years" but not within the past 5 years. US respondents were

**TABLE 1—Demographic Characteristics of the Sample, by Country of Residence: United States and Canada, 2002**

	United States (n=5183), % <sup>a</sup>	Canada (n=3505), % <sup>a</sup>	$\chi^2$ P
Women	52.0	50.9	.38
Age, years			
18-40	43.3	43.6	.79
41-64	40.7	40.7	.97
≥ 65	16.0	15.6	.62
Race <sup>b</sup>			
White	72.3	82.1	<.0001
Black	12.0	...	<sup>b</sup>
Other/multiple race	15.7	17.9	.02
Hispanic	11.6	...	<sup>b</sup>
Foreign born	16.1	19.9	.0001
Formal education	50.8	49.2	.21
beyond high school <sup>c</sup>			
Household income, US \$ <sup>d</sup>			
0-19 999	12.9	13.5	.03
20 000-34 999	17.9	22.2	<.0001
35 000-69 999	35.5	39.6	<.0001
≥ 70 000	33.7	24.7	<.0001
Relative poverty rates:	22.9	18.8	.0002
less than 60% of median income			
Marital status:	64.7	65.4	.16
married/ common law/ partner			

<sup>a</sup>Percentages were weighted to approximate the US population as determined from the October 2002 Current Population Survey, and to approximate the Canadian population as determined from the 1996 Census.  
<sup>b</sup>Race and ethnicity were self-reported. Because of small numbers, Blacks and Hispanics were not identified in the Canadian sample. In the United States, respondents of Hispanic descent were coded as Hispanic regardless of race (Black, White, or other race).  
<sup>c</sup>Includes college degree or vocational training.  
<sup>d</sup>Canadian dollars were adjusted for 2002 purchasing power parity.

slightly more likely than Canadians to give a rating of excellent to their hospital care (but not to their physician or community-based care). United States respondents also were more satisfied than Canadians with their hospital and community-based care, but not with

**TABLE 2—Health Status, Access to Care, and Receipt of Health Services, by Country of Residence: United States and Canada, 2002**

	United States (n=5183), % <sup>a</sup>	Canada (n=3505), % <sup>a</sup>	$\chi^2$ P
<b>Behavioral risk factors</b>			
Overweight	33.9	34.0	.94
Obese	20.7	15.3	<.0001
Sedentary lifestyle <sup>b</sup>	13.6	6.5	<.0001
Current daily smoker <sup>c</sup>	16.8	19.0	.02
<b>Chronic illness prevalence</b>			
Diabetes	6.7	4.7	.0002
Asthma	7.6	6.7	.17
Hypertension	18.3	13.9	<.0001
Arthritis	17.9	16.0	.02
COPD	1.9	1.0	.0003
Heart disease	5.9	5.5	.43
Major depression in past year <sup>d</sup>	8.7	8.2	.45
<b>Measures of health status</b>			
Health Description Index excellent or very good	58.9	60.4	.21
Health Utility Index <sup>e</sup> above lowest quartile	76.0	78.6	.01
Difficulty with activities sometimes or often	28.3	27.3	.37
Any cognitive problem	30.2	27.3	.007
Impact of health problems <sup>f</sup> sometimes or often	29.1	29.7	.57
<b>Access to care/receipt of health services</b>			
Regular medical doctor	79.6	84.9	<.0001
Needed medicines but could not afford them	9.9	5.1	<.0001
Papanicolaou test within less than 3 years <sup>g</sup>	88.9	79.0	<.0001
Papanicolaou test within less than 5 years	91.9	82.9	<.0001
Mammogram within less than 2 years <sup>h</sup>	88.8	81.3	.003
Mammogram within less than 5 years	96.3	94.9	.29
Contacted any medical doctor in past 12 months	82.5	83.4	.32
Dentist within past year	64.8	64.2	.60
With high blood pressure and received treatment in past year	92.4	89.5	.10
With asthma and received medication in past year	80.6	80.7	.98
With depression in past year and has consulted with a health professional	51.8	55.7	.36
Unmet health care needs <sup>i</sup>	13.2	10.7	.002
Because of long waiting time	0.7	3.5	<.0001
Because of cost	7.0	0.8	<.0001
Because of other reasons <sup>j</sup>	6.4	7.2	<.0001
<b>Perceived quality of care and satisfaction with care</b>			
Quality of health care received—excellent	41.9	39.0	.02
Hospital care	53.7	46.4	.001
Physician care	58.9	59.3	.81
Community-based care	46.9	41.5	.14
Satisfaction with health care received—very satisfied	53.3	43.7	<.0001
Hospital care	60.0	44.9	<.0001
Physician care	68.1	66.2	.19
Community-based care	60.7	50.5	.006

Continued

TABLE 2—Continued

Note. COPD = chronic obstructive pulmonary disease.

<sup>a</sup>Percentages are weighted to approximate the US population as determined from the October 2002 Current Population Survey and to approximate the Canadian population as determined from the 1996 Census.

<sup>b</sup>Defined as no physical activity in the past 3 months.

<sup>c</sup>Individuals who report having smoked at least 1 whole cigarette and now smoke cigarettes every day.

<sup>d</sup>Ninety percent or greater probability that the respondent would have been diagnosed as having a major depressive episode in the past 12 months if he or she had completed the Long-Form Composite International Diagnostic Interview.

<sup>e</sup>This index provides a description of an individual's overall functional health on the basis of 8 attributes: vision, hearing, speech, mobility, dexterity, cognition, emotion, and pain and discomfort.

<sup>f</sup>Derived variable on the basis of responses to the following question: "How often does a long-term physical condition or mental condition or health problem reduce the amount or the kind of activity you can do at home, at school, at work, and in other activities, for example, transportation or leisure?"

<sup>g</sup>Among women aged 18–65 years who had not undergone hysterectomy.

<sup>h</sup>Among women aged 50–69 years.

<sup>i</sup>On the basis of responses to the following question: "During the past 12 months, was there ever a time when you felt that you needed health care but you did not receive it?"

<sup>j</sup>Because of care not available in area, not available when required, felt would be inadequate, too busy, did not get around to it, did not know where to go, transportation problems, language problems, personal/family responsibilities, dislikes doctors/afraid, decided not to seek care, or other reason.

their physician care. Although more US respondents had unmet health care needs than did Canadians (13.2% and 10.7%, respectively), their reasons for having such needs differed. Seven percent of US respondents (and less than 1% of Canadians) had unmet needs because of financial barriers, whereas 3.5% of Canadians had unmet needs because of waiting times (vs less than 1% of US residents).

Table 3 presents data on access to care and receipt of health services according to country and insurance status (analyses limited to US respondents) and according to country and race. Across virtually all measures, uninsured US residents had much worse access to care, received fewer medical services, and rated the quality of their care lower than did insured US residents. The uninsured were also less satisfied with the care they received. The US uninsured fared much worse than Canadians on most of these measures, whereas the US insured fared slightly better than Canadians (results of statistical testing not shown). Non-Whites were more obese than were Whites in the United States, but the opposite was true in Canada. In both countries, non-Whites were more sedentary. Racial differences in access to care were less marked in Canada than in the United States. Yet among the approximately 8% of respondents who reported depression in the past year, non-Whites in both countries (and the US uninsured) were less likely to receive treatment than were Whites or the US insured. Unlike non-White US residents,

non-White Canadians were less likely to have received a Pap test within the past 3 years. Non-Whites in both countries had lower perceived quality of care and satisfaction than did Whites.

Unadjusted analyses of health status, access to care, and receipt of health services according to country, immigrant status, and income are available from the authors by request. These analyses revealed that the US foreign-born residents have worse access to care than do the US native-born residents, and that US respondents with incomes in the lowest quintile were less likely to have a regular medical doctor or to have contacted any medical doctor in the past 12 months than were US respondents in the highest quintile. Such differences in access were not present in Canada.

#### Multivariate Results

Table 4 presents the results of multivariate analyses of access to care, using logistic regression to examine the impact of income, age, gender, race, and immigrant status. US residents (compared with Canadians) were less likely to have a regular doctor, more likely to have unmet health needs, and more likely to forgo needed medicines. US respondents were also more likely to say that they were very satisfied with the way health care services were provided. At the same time, US respondents were more likely to report that they were somewhat or very dissatisfied with health care services (odds ratio = 1.27, 95%

confidence interval = 1.04, 1.54; data not shown in Table 4). In both the United States and Canada, respondents in the highest income quintile (compared with those in the lowest income quintile) had better access to care by most measures. The foreign-born respondents in both countries were less likely to perceive their quality of care as excellent than were the native born, although only in the United States were foreign-born respondents less likely to have a regular medical doctor, to have contacted a medical doctor in the past year, or to be very satisfied with their care. Non-Whites in both countries were less likely to be very satisfied with their health care than were Whites, although only in the United States were the former more likely to report unmet health care needs or to forgo needed medicines and less likely to have had a dental visit or to rate their quality of care as excellent.

#### DISCUSSION

Compared with Canadians, US residents are one third less likely to have a regular medical doctor, one fourth more likely to have unmet health care needs, and more than twice as likely to forgo needed medicines. Problems accessing medical care are particularly dire for the US uninsured. When they do receive medical care, US residents are more likely than Canadians to rate their satisfaction at the extremes (high and low) of the satisfaction scale. Health disparities on the basis of race, income, and immigrant status are present in both countries, but appear to be more pronounced in the United States.

Our analyses of quality of care and satisfaction are limited, because JCUSH questions were not tested for validity and reliability. In addition, the JCUSH contained no outcome data. We observed 1 quality problem in Canada—at least 17% and perhaps as many as 21% of Canadian women are not receiving recommended cervical cancer screening. This deficiency may reflect low reimbursement rates for this service in Canada. However, death rates from cervical cancer have long been lower in Canada than in the United States,<sup>1</sup> presumably reflecting past screening practices and population risk factors. The JCUSH data suggest

**TABLE 3—Access to Care and Receipt of Health Services, by Country and Insurance Status (for United States Only) and by Country and Race: United States and Canada, 2002**

	US Insured (n = 4565), % <sup>a</sup>	US Uninsured (n = 523), % <sup>a</sup>	$\chi^2$ P	US White (n = 3826), % <sup>a</sup>	US Non-White, (n = 1127), % <sup>a</sup>	$\chi^2$ P	Canadian White (n = 2890), % <sup>a</sup>	Canadian Non-White (n = 565), % <sup>a</sup>	$\chi^2$ P
<b>Access to care/receipt of health services</b>									
Regular medical doctor	84.6	40.0	<.0001	82.2	72.7	<.0001	85.6	80.7	.02
Contacted any medical doctor in past 12 months	85.9	55.6	<.0001	84.3	77.8	<.0001	83.6	82.1	.48
Dentist within past year	68.0	39.5	<.0001	68.5	55.1	<.0001	64.1	64.5	.90
With high blood pressure and received treatment in past year	92.9	83.5	.15	91.8	93.8	.39	88.9	91.5	.49
With asthma and received medication in past year	83.9	52.3	.02	79.7	81.5	.78	82.7	68.3	.18
With depression in past year and has consulted with a health professional	55.6	36.2	.008	60.5	29.8	<.0001	60.5	33.3	.0003
Needed medicines but could not afford them	7.6	28.3	<.0001	8.3	14.4	<.0001	4.9	6.0	.32
Unmet health care needs <sup>b</sup>	10.2	36.3	<.0001	11.1	18.6	<.0001	10.8	10.2	.71
Because of long waiting time	0.7	0.9	.01	...	...	...	...	...	...
Because of cost	4.0	30.4	<.0001	...	...	...	...	...	...
Because other reasons <sup>c</sup>	6.1	8.7	<.0001	...	...	...	...	...	...
<b>Perceived quality of care and satisfaction with care</b>									
Quality of health care received—excellent	43.4	26.9	<.0001	45.6	31.9	<.0001	40.4	32.5	.002
Hospital care	55.1	38.0	.004	57.8	40.3	<.0001	48.4	36.4	.02
Physician care	59.6	49.5	.01	61.7	49.0	<.0001	61.6	49.6	.0003
Community-based care	52.6	22.7	.0001	56.3	29.6	<.0001	43.4	31.0	.05
Satisfaction with health care received—very satisfied	55.0	36.8	<.0001	56.6	44.2	.0001	45.5	35.0	.0001
Hospital care	61.7	40.9	.0009	64.2	46.2	<.0001	47.7	29.8	.0002
Physician care	68.7	57.7	.006	70.3	60.4	.0001	67.8	58.4	.004
Community-based care	66.1	36.5	.0005	68.0	46.5	.002	53.6	36.4	.009
<b>Behavioral risk factors</b>									
Weight									
Overweight	33.8	36.0	.40	33.4	35.6	.26	35.1	28.5	.007
Obese	20.8	20.3	.85	19.2	25.2	.0004	16.2	12.0	.01
Sedentary lifestyle <sup>d</sup>	12.7	20.7	.0003	11.6	18.7	<.0001	6.0	8.6	.05
Current daily smoker <sup>e</sup>	15.0	30.9	<.0001	17.5	14.6	.04	19.8	15.4	.02
<b>Chronic illness prevalence</b>									
Hypertension	19.2	10.0	<.0001	18.0	18.7	.66	14.3	11.2	.05
Asthma	7.5	7.8	.88	7.4	7.9	.70	7.0	5.6	.25
Major depression in past year <sup>f</sup>	8.0	16.8	<.0001	8.6	9.7	.34	8.3	8.3	.98
<b>Screening history</b>									
Papanicolaou test within less than 3 years <sup>g</sup>	90.6	77.2	<.0001	89.8	87.5	.19	82.1	65.5	<.0001
Papanicolaou test within less than 5 years	93.3	82.2	.0002	93.1	89.6	.04	86.4	67.9	<.0001
Mammogram within less than 2 years <sup>h</sup>	89.6	74.5	.06	88.4	89.3	.77	81.0	82.2	.83
Mammogram within less than 5 years	96.8	87.7	.11	95.9	97.7	.32	94.6	96.3	.53

<sup>a</sup>Percentages were weighted to approximate the US population as determined from the October 2002 Current Population Survey and to approximate the Canadian population as determined from the 1996 Census.

<sup>b</sup>On the basis of responses to the following question: "During the past 12 months, was there ever a time when you felt that you needed health care but you did not receive it?" Reasons for unmet health care needs are not presented according to race because of small numbers.

<sup>c</sup>Because of care not available in area, not available when required, felt would be inadequate, too busy, did not get around to it, did not know where to go, transportation problems, language problems, personal/family responsibilities, dislikes doctors/afraid, decided not to seek care, or other reason.

<sup>d</sup>Defined as no physical activity in the past 3 months.

<sup>e</sup>Individuals who report having smoked at least 1 whole cigarette and now smoke cigarettes every day.

<sup>f</sup>Ninety percent or greater chance that the respondent would have been diagnosed as having a major depressive episode in the past 12 months if they had completed the Long-Form Composite International Diagnostic Interview.

<sup>g</sup>Among women aged 18–65 years who had not undergone hysterectomy.

<sup>h</sup>Among women aged 50–69 years.

**TABLE 4—Multivariate Analyses<sup>a</sup> of Access to Care, by Country of Residence, Income, Age, Gender, Race, and Immigrant Status: United States and Canada, 2002**

	All US Respondents Compared With All Canadian Respondents, Odds Ratio (95% CI)	Disparities Among Canadian Respondents, Odds Ratio (95% CI)	Disparities Among US Respondents, Odds Ratio (95% CI)
Regular medical doctor	0.66 (0.57, 0.75)†		
Household income, US \$ <sup>b</sup>			
0-19 999		1.00 (reference)	1.00 (reference)
20 000-34 999		1.07 (0.73, 1.57)	1.23 (0.88, 1.71)
35 000-69 999		1.39 (0.98, 1.99)	2.21 (1.62, 3.01)†
≥ 70 000		1.71 (1.13, 2.60)**	2.58 (1.86, 3.57)†
Immigrant status			
Native born		1.00 (reference)	1.00 (reference)
Foreign born		0.73 (0.54, 1.00)*	0.51 (0.41, 0.65)†
Race			
White		1.00 (reference)	1.00 (reference)
Non-White		0.98 (0.71, 1.35)	0.95 (0.76, 1.18)
Contacted any medical doctor in past 12 months	0.94 (0.81, 1.08)		
Household income, US \$ <sup>b</sup>			
0-19 999		1.00 (reference)	1.00 (reference)
20 000-34 999		1.05 (0.71, 1.54)	1.12 (0.78, 1.60)
35 000-69 999		1.17 (0.82, 1.68)	1.65 (1.19, 2.31)**
≥ 70 000		1.51 (1.00, 2.27)*	1.72 (1.21, 2.43)**
Immigrant status			
Native born		1.00 (reference)	1.00 (reference)
Foreign born		0.90 (0.66, 1.22)	0.70 (0.54, 0.89)**
Race			
White		1.00 (reference)	1.00 (reference)
Non-White		1.08 (0.78, 1.49)	0.89 (0.70, 1.12)
Self-perceived unmet health care needs in past year	1.27 (1.08, 1.48)**		
Household income, US \$ <sup>b</sup>			
0-19 999		1.00 (reference)	1.00 (reference)
20 000-34 999		0.75 (0.51, 1.10)	0.57 (0.40, 0.80)***
35 000-69 999		0.57 (0.40, 0.82)**	0.37 (0.27, 0.52)†
≥ 70 000		0.36 (0.23, 0.57)†	0.25 (0.17, 0.37)†
Immigrant status			
Native born		1.00 (reference)	1.00 (reference)
Foreign born		0.74 (0.51, 1.08)	1.01 (0.75, 1.35)
Race			
White		1.00 (reference)	1.00 (reference)
Non-White		1.00 (0.69, 1.45)	1.45 (1.12, 1.88)**
Needed medicines but could not afford them	2.12 (1.73, 2.59) †		
Household income, US \$ <sup>b</sup>			
0-19 999		1.00 (reference)	1.00 (reference)
20 000-34 999		0.59 (0.38, 0.92)*	0.54 (0.39, 0.77)***
35 000-69 999		0.20 (0.12, 0.33)†	0.26 (0.19, 0.37)†

Continued

that Canada no longer enjoys greater satisfaction with its health care than does the United States.<sup>24</sup> It seems plausible that Canada's far lower health spending compromises aspects of care that affect satisfaction but not health outcomes (e.g., the attractiveness of the physical plant or waiting times for elective services).

Our finding that US residents have slightly higher rates of unmet health care needs confirms previous findings.<sup>2,25</sup> As in previous studies,<sup>2,25</sup> we found that barriers to care differed in the 2 countries: in the United States cost was the principal barrier, whereas in Canada waiting times were an issue. Canada's waiting times have received substantial press attention in the United States.<sup>26</sup> Nonetheless we found that long waiting times led to an unmet health need for only a small percentage (3.5%) of Canadians.

Racial disparities in health, present in both countries,<sup>27,28</sup> were more extreme in the United States. In multivariate analyses, non-Whites in the United States, but not in Canada, were more likely to have unmet health needs, to forgo needed medicines, and to have lower perceived quality of care than were Whites. Yet non-White Canadians had lower Pap test rates and lower rates of treatment for depression than did White Canadians. It is possible that equalization of financial access may not ensure receipt of culturally conditioned services such as pelvic exams and psychiatric care. Comparing racial disparities in the 2 nations is complicated by the fact that each has a very different non-White population. The reasons for disparities involving Aboriginal Canadians and Asian Canadians may be different from those involving African Americans in the United States. Furthermore, the JCUSH did not provide language data on respondents; it is possible that the observed differences in both countries may in part reflect language barriers.

Income disparities may explain much, but not all, of racial disparities in health.<sup>29</sup> For Canadians, we, like others,<sup>30</sup> found income disparities in access to care. Like Katz et al.,<sup>9</sup> we also observed that low-income Canadians have better access to medical care than do low-income US residents. Our study adds to others<sup>2</sup> in finding marked income disparities in perceived quality of care. Health disparities

TABLE 4—Continued

≥ 70 000		0.07 (0.03, 0.18)†	0.09 (0.06, 0.14)†
Immigrant status			
Native born		1.00 (reference)	1.00 (reference)
Foreign born		0.85 (0.53, 1.37)	0.79 (0.58, 1.09)
Race			
White		1.00 (reference)	1.00 (reference)
Non-White		1.15 (0.74, 1.79)	1.54 (1.19, 1.98)***
Dental visit within past year	1.01 (0.91, 1.13)		
Household income, US \$ <sup>b</sup>			
0-19 999		1.00 (reference)	1.00 (reference)
20 000-34 999		1.41 (1.08, 1.85)**	1.35 (1.03, 1.77)*
35 000-69 999		2.95 (2.28, 3.84)†	2.39 (1.86, 3.08)†
≥ 70 000		5.35 (3.88, 7.37)†	4.79 (3.63, 6.32)†
Immigrant status			
Native born		1.00 (reference)	1.00 (reference)
Foreign born		1.12 (0.89, 1.41)	0.93 (0.75, 1.15)
Race			
White		1.00 (reference)	1.00 (reference)
Non-White		1.00 (0.79, 1.27)	0.67 (0.56, 0.81)†
Quality of health care received—excellent	1.11 (1.00, 1.23)*		
Household income, US \$ <sup>b</sup>			
0-19 999		1.00 (reference)	1.00 (reference)
20 000-34 999		1.24 (0.94, 1.65)	1.08 (0.81, 1.44)
35 000-69 999		1.28 (0.98, 1.66)	1.35 (1.04, 1.76)*
≥ 70 000		1.85 (1.38, 2.50)†	1.82 (1.38, 2.38)†
Immigrant status			
Native born		1.00 (reference)	1.00 (reference)
Foreign born		0.68 (0.54, 0.85)***	0.69 (0.55, 0.86)***
Race			
White		1.00 (reference)	1.00 (reference)
Non-White		0.91 (0.71, 1.17)	0.70 (0.58, 0.84)***
Satisfaction with health care received—very satisfied	1.47 (1.32, 1.63)†		
Household income, US \$ <sup>b</sup>			
0-19 999		1.00 (reference)	1.00 (reference)
20 000-34 999		1.23 (0.93, 1.62)	1.26 (0.95, 1.67)
35 000-69 999		1.36 (1.05, 1.75)*	1.23 (0.95, 1.59)
≥ 70 000		1.97 (1.47, 2.63)†	1.74 (1.33, 2.26)†
Immigrant status			
Native born		1.00 (reference)	1.00 (reference)
Foreign born		0.86 (0.69, 1.08)	0.74 (0.60, 0.91)**
Race			
White		1.00 (reference)	1.00 (reference)
Non-White		0.75 (0.59, 0.96)*	0.75 (0.62, 0.89)***

Note. CI = confidence interval.

<sup>a</sup>Multivariate logistic regression models control for gender, age, income level, race, and immigrant status.

<sup>b</sup>Canadian dollars are adjusted for 2002 purchasing power parity. Respondents with missing income included as an income category, effect estimates not shown.

\* $P \leq .05$ ; \*\* $P \leq .01$ ; \*\*\* $P \leq .001$ ; † $P < .0001$ .

on the basis of immigrant status are also more pronounced in the United States than in Canada. Yet this comparison is problematic because the immigrant populations of the 2 countries differ. In Canada, many recent immigrants are Asian,<sup>31</sup> whereas in the United States, Latinos are the largest immigrant group, followed by Asians. Unfortunately, the JCUSH contains no data on the country of origin or the date of immigration, precluding more refined comparisons of immigrant health.

The JCUSH is also limited by the different response rates in the 2 nations: 69.3% in Canada and 50% in the United States. The response rate reflects both the proportion of valid telephone numbers and the cooperation rate of potential respondents. The proportion of valid telephone numbers is higher in Canada because numbers can be verified to be working and residential by calling telephone companies; in the United States, numbers cannot be confirmed in the same way. US residents were more likely than Canadians to refuse participation in the survey, and to break off the interview once it was started.<sup>14</sup> Cultural differences between US residents and Canadians may account for both their differential participation in the survey and for the nature of their survey responses.

Comparisons of access to dental care in the 2 countries are of interest, given that neither country has universal dental coverage. Unlike physician services in Canada, which are fully insured in every province, dental coverage varies from province to province. In Canada, income disparities were much more pronounced for dental care than for medical care and were of a similar magnitude to the US disparities.

Universal coverage attenuates inequities in health care and should be implemented in the United States. However, adequate funding to avoid waits for care is essential; otherwise, satisfaction with care may diminish. Moreover, universal coverage is not sufficient to eliminate all health disparities. We also must address inferior systems of care in institutions serving the poor and nonfinancial access barriers such as cultural and language barriers. Simultaneously, policies to address unfavorable social conditions that impact health are sorely needed. Such policies could include reduction of income inequality through tax reform, improved

housing, and expanded educational and employment opportunities for the poor. ■

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### Contributors

K. E. Lasser completed the analyses and led the writing. D. U. Himmelstein and S. Woolhandler supervised all aspects of study implementation and reviewed the article. All authors originated the study, conceptualized ideas, and interpreted findings.

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No protocol approval was needed for this study.

### References

1. OECD Health Data 2004: A Comparative Analysis of 30 Countries. Paris: Organisation for Economic Co-operation and Development; 2004.
2. Blendon RJ, Schoen C, DesRoches CM, Osborn R, Scoles KL, Zapert K. Inequities in health care: a five-country survey. *Health Aff (Millwood)*. 2002;21:182-191.
3. Hussey PS, Anderson GF, Osborn R, et al. How does the quality of care compare in five countries? *Health Aff (Millwood)*. 2004;23:89-99.
4. Katz SJ, Kessler RC, Lin E, Wells KB. Medication management of depression in the United States and Ontario. *J Gen Intern Med*. 1998;13:77-85.
5. Katz SJ, Hofer TP. Socioeconomic disparities in preventive care persist despite universal coverage. Breast and cervical cancer screening in Ontario and the United States. *JAMA*. 1994;272:530-534.
6. Gorey KM, Holoway EJ, Fehringer G, et al. An international comparison of cancer survival: Toronto, Ontario, and Detroit, Michigan, metropolitan areas. *Am J Public Health*. 1997;87:1156-1163.
7. Hwang SW. Mortality among men using homeless shelters in Toronto, Ontario. *JAMA*. 2000;283:2152-2157.
8. Ross NA, Wolfson MC, Dunn JR, Berthelot JM, Kaplan GA, Lynch JW. Relation between income inequality and mortality in Canada and in the United States: cross sectional assessment using census data and vital statistics. *BMJ*. 2000;320:898-902.
9. Katz SJ, Hofer TP, Manning WG. Physician use in Ontario and the United States: The impact of socioeconomic status and health status. *Am J Public Health*. 1996;86:520-524.
10. Alter DA, Iron K, Austin PC, Naylor CD, and the SESAMI Study Group. Socioeconomic status, service patterns, and perceptions of care among survivors of acute myocardial infarction in Canada. *JAMA*. 2004;291:1100-1107.
11. Pincus T, Esther R, DeWalt DA, Callahan LF. Social conditions and self-management are more powerful determinants of health than access to care. *Ann Intern Med*. 1998;129:406-411.
12. Andrulis DP. Access to care is the centerpiece in the elimination of socioeconomic disparities in health. *Ann Intern Med*. 1998;129:412-416.
13. National Center for Health Statistics Web site. Joint Canada/United States Survey of Health, 2002-03. Available at: [http://www.cdc.gov/nchs/data/nhis/jcush\\_analyticalreport.pdf](http://www.cdc.gov/nchs/data/nhis/jcush_analyticalreport.pdf). Accessed December 6, 2004.
14. Simile C, Rama E. Operational and methodological lessons learned in conducting the 2003 Joint Canada/United States Survey of Health. In: Proceedings of the American Statistical Association Health Policy Statistics Section, 2004 Joint Statistical Meetings; August 8-12, 2004; Toronto, Ontario, Canada.
15. World Health Organization. Composite International Diagnostic Interview. Available at: <http://www.hcp.med.harvard.edu/wmhcdi>. Accessed March 21, 2005.
16. Roberge R, Berthelot JM, Wolfson MC. The Health Utility Index: measuring health differences in Ontario by socioeconomic status. *Health Rep*. 1995;7:25-32.
17. Torrance G, Furlong W, Feeny D, et al. Provisional health index for the Ontario Health Survey. Hamilton, Ontario: McMaster University Centre for Health Economics and Policy Analysis; 1992. Project No. 44400900187.
18. World Health Organization. International Classification of Functioning. Available at: <http://www3.who.int/icf/intros/ICF-Eng-Intro.pdf>. Accessed March 21, 2005.
19. Canadian Task Force on Preventive Health Care Web site. Screening for Breast Cancer. Available at: <http://www.ctfphc.org/Tables/Ch65tab2.htm>. Accessed December 6, 2004.
20. Canadian Task Force on Preventive Health Care Web site. Screening for Cervical Cancer. Available at: <http://www.ctfphc.org>. Accessed December 6, 2004.
21. US Preventive Services Task Force Web site. Screening for Breast Cancer. Available at: <http://www.ahrq.gov/clinic/uspstf/uspstfbrca.htm>. Accessed December 6, 2004.
22. US Preventive Services Task Force Web site. Screening for Cervical Cancer. Available at: <http://www.ahrq.gov/clinic/uspstf/uspstfcerv.htm>. Accessed December 6, 2004.
23. LaVange LM, Stearns SC, Lafata JE, Koch GG, Shah BV. Innovative strategies using SUDAAN for analysis of health surveys with complex samples. *Stat Methods Med Res*. 1996;5:311-329.
24. Blendon RJ, Leitman R, Morrison I, Donelan K. Satisfaction with health systems in ten nations. *Health Aff (Millwood)*. 1990;9:185-192.
25. Donelan K, Blendon RJ, Schoen C, Davis K, Binns K. The cost of health system change: public discontent in five nations. *Health Aff (Millwood)*. 1999;18:206-216.
26. Krauss C. Canada looks for ways to fix its health care system. *New York Times*. September 12, 2004: A3.
27. Ng E. Disability among Canada's aboriginal peoples in 1991. *Health Rep*. 1996;8:25-32[English]; 25-33[French].
28. Chen J, Wilkins R, Ng E. Health expectancy by immigrant status, 1986 and 1991. *Health Rep*. 1996;8:29-38[English]; 31-41[French].
29. Isaacs SL, Schroeder SA. Class—the ignored determinant of the nation's health. *N Engl J Med*. 2004;351:1137-1142.
30. Chen J, Hou F. Unmet needs for health care. *Health Rep*. 2002;13:23-34.
31. Chen J, Ng E, Wilkins R. The health of Canada's immigrants in 1994-95. *Health Rep*. 1996;7:33-45[English]; 37-50[French].

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