
Awareness and Use of Canada's Children's Fitness Tax Credit

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PRÉCIS

Cette étude porte sur la connaissance et l'utilisation du crédit d'impôt pour la condition physique des enfants (CICPE) du Canada, et se fonde sur les données des déclarations de revenus des contribuables de 2007 à 2009 ainsi que sur les données d'une enquête nationale qui sonde la perception des parents relativement au CICPE. Les données des déclarations de revenus de Statistique Canada nous permettent d'examiner ce que les contribuables ont fait, alors que les données de l'enquête nationale nous permettent d'étudier dans quelle mesure les Canadiens ayant des enfants de moins de 18 ans connaissaient l'existence du CICPE, leur perception de son importance, et son lien dans leur décision d'inscrire leurs enfants à des programmes d'activité physique organisés. Collectivement, ces deux sources de données offrent un portrait plus complet des personnes qui utilisent le CICPE et aident à déterminer les raisons possibles pour lesquelles d'autres ne demandent pas le crédit.

Lors de l'analyse des données des déclarations de revenus, de multiples procédures de régression logistique ont été utilisées pour examiner les associations statistiques entre l'utilisation du CICPE et les montants demandés au titre de ce crédit, et des données socio-économiques et démographiques, telles que le revenu, la province/le territoire de résidence, le milieu de vie urbain/rural, l'âge des parents, le statut d'immigré, la structure familiale, le sexe de l'enfant et le nombre d'enfants.

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Nos résultats démontrent que les familles monoparentales, celles ayant au moins un garçon et celles vivant en milieu urbain étaient plus portées à demander le CICPE et à demander des montants plus élevés. La probabilité de demander le CICPE était entre 4 et 30 pour cent plus élevée dans les familles dont les niveaux de revenu annuel étaient supérieurs à 20 000 \$ par rapport à celles gagnant moins de 20 000 \$ annuellement. Dans la plupart des cas, le montant demandé augmentait également avec la hausse du revenu, de sorte que les familles gagnant de 100 000 à 200 000 \$ et celles gagnant plus de 200 000 \$ faisaient des demandes au titre du CICPE qui étaient, en moyenne, de 125 \$ et de 250 \$ plus élevées, respectivement, que celles gagnant moins de 20 000 \$.

Nous avons utilisé des méthodes statistiques semblables pour notre analyse des données d'enquête représentatives à l'échelle nationale, afin de calculer les fréquences et les estimations de la prévalence selon les caractéristiques des participants, et pour vérifier les associations entre la connaissance et la perception des parents à l'égard du CICPE, et les principales variables sociodémographiques. Nos résultats démontrent que la connaissance du CICPE était élevée, puisqu'environ 65 pour cent des répondants ont dit avoir entendu parler du crédit. Le sexe, l'âge, l'éducation et le revenu étaient tous des éléments importants liés à la connaissance du CICPE : les femmes, les parents âgés de 40 à 49 ans, ceux ayant fait des études postsecondaires, et ceux gagnant plus de 40 000 \$ annuellement étaient tous plus susceptibles de connaître le CICPE. Parmi ceux qui connaissaient le CICPE, moins d'un tiers estimait que le CICPE les avait motivés ou encouragés, ou leur avait facilité la tâche, à inscrire leurs enfants à des programmes d'activité physique. Nos résultats offrent une information objective concernant l'utilisation du CICPE et soulèvent des questions concernant l'équité et l'efficacité potentielle du programme. Avec l'instauration de crédits d'impôt semblables au CICPE fédéral dans d'autres administrations fiscales provinciales, il est de plus en plus important d'évaluer de façon critique ces programmes et de mettre en oeuvre les changements nécessaires pour combler leurs lacunes et ainsi maximiser le rendement de cet investissement public.

ABSTRACT

This study examines the awareness and use of Canada's children's fitness tax credit (CFTC), using taxfilers' income tax return data from 2007 through 2009 as well as national survey data that explore parents' perceptions of the CFTC. The income tax return data from Statistics Canada allow us to examine what taxfilers did, while the national survey data allow us to investigate the extent to which Canadians with children under the age of 18 were aware of the CFTC, their perceptions of its importance, and its relation to their decisions to enrol their children in organized physical activity programs. Collectively, these two data sources offer a more complete picture of who is using the CFTC and help in identifying possible reasons why others are not claiming the credit.

In the analysis of the income tax return data, multiple logistic regression procedures were used to examine statistical associations between the use of and the amounts claimed for the CFTC and socioeconomic and demographic data, such as income, province/territory of residence, urban/rural residence, parental age, immigration status, family structure, gender of the child, and number of children.

Our results show that families headed by a single parent, those with at least one male child, and those living in urban areas were all more likely to claim the CFTC and claimed greater amounts through the CFTC. The likelihood of claiming the CFTC was between 4 percent and 30 percent greater in families at annual income levels above \$20,000

compared to those earning less than \$20,000 annually. In most cases, the amount claimed also increased with increasing income such that families earning \$100,000 to \$200,000 and those earning more than \$200,000 had CFTC claims that were, on average, \$125 and \$250 higher, respectively, than those making less than \$20,000.

We employed similar statistical methods in our analysis of nationally representative survey data, in order to calculate frequencies and prevalence estimates by participant characteristic and to test for associations between parental awareness and perceptions of the CFTC and key sociodemographic variables. Our results show that awareness of the CFTC was high, with approximately 65 percent of respondents reporting that they had heard of the credit. Gender, age, education, and income were all significantly associated with CFTC awareness: women, parents between 40 and 49 years of age, those with post-secondary education, and those earning more than \$40,000 annually were all more likely to be familiar with the CFTC. Among those familiar with the CFTC, fewer than one-third felt that the CFTC motivated them or encouraged them, or made it easier for them, to register their children in physical activity programs. Our results offer objective information regarding the use of the CFTC and raise questions regarding the equity and potential effectiveness of the program. With the spread of tax credits similar to the federal CFTC to other provincial jurisdictions, it is increasingly important to critically evaluate these programs and implement the changes necessary to address their limitations, and thereby maximize the return on this public investment.

KEYWORDS: HEALTH ■ POLICY ■ TAX CREDITS ■ CHILDREN ■ YOUTH ■ TAX EXPENDITURES

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INTRODUCTION

In most, if not all, industrialized nations, rates of physical activity among children and youth are alarmingly low. In Canada, recently released data suggest that fewer than 10 percent of Canadian children and youth meet current physical activity guidelines of 60 minutes of moderate- to vigorous-intensity physical activity daily.¹ Given the health benefits of physical activity and current concerns about rising rates of childhood obesity and associated co-morbidities, increasing participation in

1 Rachel C. Colley, Didier Garriguet, Ian Janssen, Cora L. Craig, Janine Clarke, and Mark S. Tremblay, "Physical Activity of Canadian Children and Youth: Accelerometer Results from the 2007 to 2009 Canadian Health Measures Survey" (2011) 22:1 *Health Reports* 15-23.

physical activities among children and youth is now a public health priority in Canada.² Researchers and public health decision makers have been exploring the use of economic incentives as a means of encouraging physical activity.³ An example of such a strategy is the children's fitness tax credit (CFTC), which was introduced by the Canadian government in 2007. The CFTC allows parents to claim a non-refundable federal income tax credit for fees incurred (up to \$500 per child) to register children under 16 years of age in eligible physical activity programs.⁴ To qualify, a program must meet several criteria: it must be ongoing (a minimum of eight consecutive weeks' duration or, for children's camps, five consecutive days); it must be supervised; and it must promote cardiorespiratory endurance plus at least one other component of physical fitness.⁵ There is limited evidence demonstrating the efficacy of such economic incentives in influencing greater physical activity.⁶ The effectiveness of fiscal policies in health promotion depends on the behaviour that a particular policy seeks to influence and the structure of the policy. Tax-based measures offer the advantage of administrative efficiency; however, they have inherent limitations owing

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- 2 Mark S. Tremblay, Margot Shields, Manon Laviolette, Cora L. Craig, Ian Janssen, and Sarah Connor Gorber, "Fitness of Canadian Children and Youth: Results from the 2007-2009 Canadian Health Measures Survey" (2010) 21:1 *Health Reports* 7-20; Darren E.R. Warburton, Crystal Whitney Nicol, and Shannon S.D. Bredin, "Health Benefits of Physical Activity: The Evidence" (2006) 174:6 *Canadian Medical Association Journal* 801-9; and Mark S. Tremblay, "Major Initiatives Related to Childhood Obesity and Physical Inactivity in Canada: The Year in Review" (2012) 103:3 *Canadian Journal of Public Health* 164-69.
 - 3 See, for example, Guy E.J. Faulkner, Paul Grootendorst, Van H. Nguyen, Tatiana Andreyeva, Kelly Arbour-Nicitopoulos, M. Christopher Auld, Sean B. Cash, John Cawley, Peter Donnelly, Adam Drewnowski, Laurette Dubé, Roberta Ferrence, Ian Janssen, Jeffrey LaFrance, Darius Lakdawalla, Rena Mendelsen, Lisa M. Powell, W. Bruce Traill, and Frank Windmeijer, "Economic Instruments for Obesity Prevention: Results of a Scoping Review and Modified Delphi Survey" (2011) 8 *International Journal of Behavioral Nutrition and Physical Activity* 109. (www.ijbnpa.org/content/8/1/109); and Barbara von Tigerstrom, Tamara Larre, and JoAnne Sauder, "Using the Tax System To Promote Physical Activity: Critical Analysis of Canadian Initiatives" (2011) 101:8 *American Journal of Public Health* e10-e16.
 - 4 For a description of the operation of the credit, see Canada Revenue Agency, *Line 365—Children's Fitness Amount* (www.cra-arc.gc.ca/fitness/). The age eligibility requirements state that the children must be under 16 years of age or under 18 years of age if eligible for the disability amount at the beginning of the year in which an eligible fitness expense was paid.
 - 5 These criteria reflect recommendations for the design of the program set out in Canada, *Report of the Expert Panel for the Children's Fitness Tax Credit* (Ottawa: Department of Finance, 2006). See also CRA, *supra* note 4.
 - 6 Roland Sturm, "Economics and Physical Activity: A Research Agenda" (2005) 28:2S2 *American Journal of Preventive Medicine* 141-49; Antronette K. Yancey, William J. McCarthy, Gail G. Harrison, Weng Kee Wong, Judith M. Siegel, and Joanne Leslie, "Challenges in Improving Fitness: Results of a Community-Based Randomized Controlled Lifestyle Change Intervention" (2006) 15:4 *Journal of Women's Health* 412-29; and John C. Spence, Nicholas L. Holt, Julia K. Dutove, and Valerie Carson, "Uptake and Effectiveness of the Children's Fitness Tax Credit in Canada: The Rich Get Richer" (2010) 10:356 *BMC Public Health* 1-6 (www.biomedcentral.com/1471-2458/10/356). See also Faulkner et al., *supra* note 3.

to the structure of the tax system, including a delay between the time the expense is incurred and the time the tax benefit is received, and the small percentage (for the CFTC, typically 15 percent or less) of fees covered by the credit.⁷

With costs in forgone tax revenue somewhere between \$90 million and \$115 million per year, the CFTC represents a substantial investment of public funds.⁸ Periodic evaluation of this policy is necessary to ensure that

1. it effectively meets its stated objective of facilitating access to physical activity and recreation programs for children and youth;
2. its benefits reach all segments of society; and
3. its benefits exceed the costs

—that is, ensure that the investment is justified. In their recently published scoping review, Faulkner et al.⁹ assert that there is insufficient evidence to support recommendations for specific tax credits to promote physical activity. To date, there have been few published evaluations of the CFTC, and only one—by Spence et al.¹⁰—examined the uptake of the credit.¹¹ In their early evaluation of the CFTC, Spence et al. found that income was a significant factor in whether Canadian parents were more likely to be aware of and make use of the CFTC, confirming early concerns regarding the equity of the program. However, their study is somewhat limited in that it was based only on self-reported data and therefore is subject to possible bias. Spence et al. focused primarily on the association between income and use of the CFTC, with a very limited examination of parental perceptions about the tax credit. In their discussion, they highlighted the need for access to objective claims data from the Canada Revenue Agency (CRA).

The objective of this study is to assess the awareness and use of the CFTC by examining rates of use by identifiable characteristics of taxfilers and exploring parental perceptions of the CFTC as they relate to parents' decisions to enrol their children in organized physical activity programs. The impact of the CFTC ultimately depends on its effect on children's rates of physical activity and health status. However, accurately measuring this effect presents significant challenges, particularly in

7 For an evaluation of the CFTC citing these and other limitations, see Tamara Larre, "The Children's Fitness Tax Credit: Right Message, Wrong Policy," in Lisa Philipps, Neil Brooks, and Jinyan Li, eds., *Tax Expenditures: State of the Art*, selected proceedings of the Osgoode 2009 Conference on Tax Expenditures and Public Policy in Comparative Perspective (Toronto: Canadian Tax Foundation, 2011), 12:1-24, particularly at 12:6-16. See also von Tigerstrom et al., *supra* note 3.

8 Canada, Department of Finance, *Tax Expenditures and Evaluations 2010* (Ottawa: Public Works and Government Services Canada, 2010), table 1, at 15.

9 Faulkner et al., *supra* note 3.

10 Spence et al. *supra* note 6.

11 In addition to the early study by Spence et al., published evaluations include reports by von Tigerstrom et al., *supra* note 3, and Larre, *supra* note 7.

the short term, when the health benefits of increased physical activity may not yet have manifested. Awareness and use of the credit are necessary, though not sufficient prerequisites, to the effectiveness of the program.

This study is, we believe, the first to use federal tax return data to examine the CFTC. In contrast to self-reported data collected via survey methods, the use of tax return data allows us to provide detailed and more accurate information on taxfilers, the credit, and the amounts claimed. Our study makes use of a large sample size, the ability to study multiple taxation years, and background taxfiler data (such as the size and profile of the family, urban/rural residence, province/territory of residence, immigration status, and household income) to provide a comprehensive examination of the CFTC. The use of tax return data is enriched with the addition of survey data pertaining to parental awareness, perceptions, and motivations related to the credit. Specifically, we identify the sociodemographic characteristics that influence perceptions of the CFTC, and compare the perceived importance or value of the CFTC with other factors (such as availability of organized programs) that may affect participation in physical activity. The combined presentation of the federal tax data and survey data provides unique and important insights into the public perception and use of the CFTC.

METHODOLOGY

Data from two sources were analyzed to examine the awareness and use of the CFTC in the years immediately following its implementation.¹² Federal income tax return data compiled by Statistics Canada for the 2007 through 2009 taxation years¹³ were accessed in order to obtain information regarding rates and amounts of CFTC use and the demographic characteristics of the taxfilers claiming the credit. In addition, nationally representative survey data collected through the Canadian Fitness and Lifestyle Research Institute (CFLRI)¹⁴ were analyzed to assess the general awareness of the CFTC, along with the parents' perceptions and motivations relating to their children's participation in eligible programs. The income tax return data allow us to examine what taxfilers did, while the national survey data allow us to investigate the

12 Ethical approval for this study was granted by the University of Saskatchewan Behavioural Research Ethics Board.

13 Heather Dryburgh, *The Longitudinal Administrative Databank (LAD) and the Longitudinal Immigration Database (IMDB): Building the LAD_IMDB—A Technical Paper*, 1980-1999 (Ottawa: Statistics Canada, 2004). See also Statistics Canada, *Longitudinal Administrative Databank: Detailed Information for 1982-2010* (Ottawa: Statistics Canada, 2012) (www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4107&Item_Id=1523); and Statistics Canada, Income Statistics Division, *Longitudinal Administrative Data Dictionary 2010* (Ottawa: Statistics Canada, 2012) (Statistics Canada, catalogue no. 12-585-X).

14 Canadian Fitness and Lifestyle Research Institute, *2008 Physical Activity Monitor: Bulletin no. 1, "Methodology"* (Ottawa: CFLIR, 2009). The PAM is an ongoing nationwide telephone survey of physical activity conducted by the CFLRI and is subject to review by a departmental Research Ethics Board at York University.

extent to which Canadians with children under the age of 18 were aware of the CFTC and perceived it to be important. Collectively, these two data sources offer a more complete picture on who is using the CFTC and help in identifying possible reasons why others are not claiming the credit.

Data Sources

Tax Data

Federal income tax return data for the 2007 through 2009 tax years were accessed through Statistics Canada's longitudinal administrative databank (LAD). The LAD is a random 20 percent sample of the tax-filing population constructed from the annual T1 family file (T1FF) and the longitudinal immigration database. Detailed information regarding the construction of the LAD is available elsewhere.¹⁵ Individuals are selected for inclusion in the LAD on the basis of their social insurance number (SIN) and, once selected, remain in the sample as long as they appear on the T1FF. Individual data across years are linked by a unique LAD identification number in order to create a longitudinal profile of each individual. The LAD is augmented each year so that it consists of approximately 20 percent of taxfilers for every year.

The LAD is based on the census family concept (one or more parents and children living at the same address) and is organized into four levels of aggregation: individual, spouse/parent, family, and child(ren) levels. Tax families are created from information in personal income tax returns. Both legal and common-law spouses are attached by the spousal SIN listed on the tax form, or by matching based on name, address, age, sex, and marital status. Children are identified through a similar algorithm and supplementary files.

The sample in our study was restricted to families with children under the age of 18 for which LAD tax data were available for the study period, resulting in a sample of approximately 3.4 million taxfilers. In instances where more than one member of a family was included in the database, the parent was chosen; if both were parents, the higher-income person was chosen.

CFLRI Survey Data

A set of questions specific to the CFTC was developed by the CFLRI, in collaboration with the research team, for inclusion in the 2009 and 2010 Physical Activity Monitor (PAM), in order to assess parents' awareness and perceptions of the CFTC and its influence on their decisions to enrol their children in organized physical activity programs at a population level¹⁶ (table 1). The methodology used in the PAM is detailed elsewhere.¹⁷ Data were collected from June 1, 2009 until August 31, 2010

15 See supra note 13.

16 The PAM, supra note 14, is based on a nationally representative sample such that, when the data are analyzed using sample weights (as was done in this study), the estimates produced represent results for the total population.

17 Ibid.

TABLE 1 Questions About the Children's Fitness Tax Credit Included in the 2009 and 2010 Physical Activity Monitor^a

Questions

1. In the past 12 months, has your child's activity level increased, stayed the same, or decreased?
2. Have you ever heard of the child fitness tax credit?
3. (If yes to question 2) Would you tell me what is the child fitness tax credit?
4. Have you used this credit on your, or your spouse's (2007, 2008) personal income taxes?
5. Do you plan on using this credit on your, or your spouse's upcoming (2008, 2009) personal income taxes?
- 5a. In the past 12 months, how much did you spend on each of your children's registration or membership fees for physical activity or sport?
- 5b. (If yes to question 4) How much did you claim per child as a child fitness tax credit on your (or your spouse's) form last year (2007, 2008)?
- 5c. (If yes to question 5) How much do you intend to claim per child as a child fitness tax credit on your (or your spouse's) upcoming (2008, 2009) tax form?
- 6a. On a scale from 1 to 5 where 1 represents not very important and 5 represents very important, how important do you think the child fitness tax credit is to increasing physical activity among Canadian children?
- 6b. Ranking on a scale from 1 to 5 where 1 represents the least important and 5 represents the most important, how would you rank the following for increasing participation in organized sport or physical activity for your child(ren)?
 - a) sport and recreation facilities
 - b) convenient and accessible programming
 - c) the child fitness tax credit
 - d) tax benefits to support your child's participation
 - e) coaching or instruction
 - f) school or after-school programs
 - g) opportunities for free play

Has the child fitness tax credit

- 7a. Motivated or encouraged you to register your child(ren) in physical activity or sport?
- 7b. Made it easier to register your child(ren) in physical activity or sport?
- 7c. Allowed you to register your child(ren) when you wouldn't have otherwise been able to?

^a The Physical Activity Monitor is a nationwide telephone survey conducted by the Canadian Fitness and Lifestyle Research Institute (CFLRI), based in Ottawa. These questions were designed by the study team in collaboration with the CFLRI.

using a computer-assisted telephone interview system. The sample was selected using random-digit dialing from household-based telephone exchanges, and the sample selected was roughly proportional to the population in each province and territory. Respondents were selected at random from all individuals aged 15 years or older in the household. For the 2010 PAM, a two-stage selection process was used, where a parent or guardian was randomly selected on the basis of the accepted nearest-birthday method. The overall survey response rate was approximately 41 percent. The sample size for the PAM was 8,000 over the two years (4,000 per year), of which 2,394 were parents of children under the age of 18 and therefore eligible for this study.

Data Analyses

All data tabulation and regression analyses of the LAD income tax data were carried out by Statistics Canada personnel using analytical programs provided by the research team. Descriptive statistics of CFTC claims across various socioeconomic and demographic variables were analyzed for 2007 through 2009. Multivariable logistic regression procedures were used to estimate the relative odds of CFTC use across the independent variables of interest (adjusted odds ratios [OR_{adj}]). An OR_{adj} greater than 1 indicates a positive association between the use of the CFTC (the dependent variable) and the independent variable in question—that is, the odds of claiming the CFTC increase given a change in the independent variable—all other covariates being held constant. Conversely, an OR_{adj} less than 1 indicates a negative association between the use of the CFTC (the dependent variable) and the independent variable in question, all other covariates being held constant.¹⁸

The continuous dependent variable describing the amount claimed through the CFTC was modelled using multivariable linear regression procedures. In all analyses, the independent variables of interest were selected a priori on the basis of theoretical considerations and the data available within the LAD. These included

- family income (a seven-level categorical variable based on after-tax household income),
- province/territory of residence,
- urban/rural residence (a six-level categorical variable reflecting the size of the urban/rural area, based on the postal code and its associated area size rank (ASR) code),
- family structure (single/dual parent),
- male child in the family (yes/no),
- prior CFTC claim (yes/no, for 2008 and 2009 data), and
- time (indicating years since the CFTC came into effect).

The number of children in the family and parental age were also included in the regression models as control variables. Time was modelled as a continuous variable, with the 2007 taxation year taking a value of 0 and each subsequent year taking the corresponding value (2008:1; 2009:2).¹⁹

The CFLRI survey data were analyzed using IBM-SPSS Complex Samples® software and procedures²⁰ to account for the multistage design of the survey and associated

18 Barbara G. Tabachnick and Linda S. Fidell, *Using Multivariate Statistics*, 5th ed. (Boston: Pearson Education, 2007).

19 In the analysis of the LAD income tax data, stratification was not performed and no weights were applied, since the sampling weight is equal across all units.

20 SPSS Inc., *IBM-SPSS Complex Samples 19* (www slash docs com /ksrypk/ibm-spss-complex-samples-19.html).

sample weights, in order to properly determine the variance estimates for this complex sample. Post-stratification adjustments reflecting non-response and the latest census distributions for age, sex, and households with parents were applied to all sample weights in order to correct for disproportional inclusion of certain groups in the sample relative to the population.²¹ Cross-tabulation procedures were used to calculate frequencies and prevalence estimates by participant characteristic. Associations between parental awareness and perceptions of the CFTC and key socio-demographic variables were assessed using multiple logistic regression procedures.²² In all analyses, 95 percent confidence intervals surrounding the estimates were used to determine significant differences between estimates.

RESULTS

Federal income tax data pertaining to the use of the CFTC from 2007 through 2009 are presented in table 2. Overall, the proportion of families claiming the CFTC increased from 31 percent in 2007 to approximately 36 percent in 2009. The use of the CFTC varied across the provinces and territories, ranging from 3.5 percent of families in Nunavut to 38.6 percent of families in Prince Edward Island. Between 2007 and 2009, use of the CFTC increased in all provinces and territories except Nunavut, which saw a 3.1 percent decline in the proportion of families claiming the CFTC. During this period, growth in CFTC claims averaged 15 percent, with the greatest increase occurring among families in the Northwest Territories, at almost 29 percent.

Of the families that claimed the CFTC, approximately 13 percent were headed by a single parent and the majority (approximately 80 percent) had one or two children. The proportion of families claiming the CFTC was considerably higher in dual-parent households compared to single-parent households over the study period (39.5 percent versus 18.0 percent in 2007-2009). Use of the CFTC was highest among parents aged 35-45 years (38 percent to 46 percent per year) and in families with two or three children (41 percent to 47 percent). Fewer than 20 percent of parents under the age of 30 or families with a single child claimed the CFTC between 2007 and 2009. For the 2007-2009 period, the average annual household income of those claiming the CFTC was approximately \$115,000 compared to the population average of approximately \$80,000 (data not shown). Approximately 46 percent of families claiming the CFTC earned more than \$100,000 annually.

The results of the multiple logistic regression analyses are presented in tables 3 through 5. Significant associations were found in the predicted directions between use of the CFTC and most independent variables included in the models.

21 A more detailed explanation of these procedures can be found in documentation provided by the CFLRI, *supra* note 14.

22 See Tabachnick and Fidell, *supra* note 18.

TABLE 2 Use of the Children's Fitness Tax Credit (CFTC) Among Families with Children Under 18 Years of Age in Canada, 2007-2009

	2007 n = 3,455,390		2008 n = 3,447,140		2009 n = 3,437,270	
	Tax families	Claimed CFTC	Tax families	Claimed CFTC	Tax families	Claimed CFTC
	n	n (%)	n	n (%)	n	n (%)
Tax family/filers	3,455,390	1,080,890 (31.3)	3,447,140	1,209,140 (35.1)	3,437,270	1,247,300 (36.3)
Annual family income						
<\$20,000	454,510	16,990 (3.7)	429,050	18,120 (4.2)	425,010	19,320 (4.5)
\$20,000-\$40,000	618,510	78,350 (12.7)	600,660	87,030 (14.5)	604,080	88,250 (14.6)
\$40,000-\$60,000	582,190	140,820 (24.2)	568,470	155,190 (27.3)	573,540	163,520 (28.5)
\$60,000-\$80,000	513,610	173,720 (33.8)	494,910	184,970 (37.4)	490,260	190,910 (38.9)
\$80,000-\$100,000	421,420	184,070 (43.7)	419,250	197,160 (47.0)	411,780	201,090 (48.8)
\$100,000-\$200,000	729,230	402,690 (55.2)	786,040	466,690 (59.4)	785,870	482,700 (61.4)
>\$200,000	132,010	83,460 (63.2)	144,860	99,070 (68.4)	143,440	100,710 (70.2)
Province/territory of residence						
Newfoundland	51,320	13,970 (27.2)	51,110	15,670 (30.7)	51,330	16,840 (32.8)
Prince Edward Island	14,490	5,330 (36.8)	14,520	5,660 (39.0)	14,470	5,810 (40.2)
Nova Scotia	91,750	26,280 (28.6)	90,540	29,000 (32.0)	89,940	29,920 (33.3)
New Brunswick	76,430	21,530 (28.2)	75,690	24,290 (32.1)	75,190	25,350 (33.7)
Quebec	785,270	245,410 (31.3)	780,430	274,310 (35.1)	775,460	285,040 (36.8)
Ontario	1,386,260	435,490 (31.4)	1,372,940	483,830 (35.2)	1,365,020	493,730 (36.3)
Manitoba	123,440	38,920 (31.5)	124,080	43,520 (35.1)	124,600	44,600 (35.8)
Saskatchewan	102,640	34,660 (33.8)	104,130	38,480 (37.0)	105,870	40,420 (38.2)
Alberta	380,890	123,010 (32.3)	388,130	138,900 (35.8)	392,110	143,790 (36.7)
British Columbia	421,810	134,090 (31.8)	424,590	152,990 (36.0)	423,150	157,230 (37.2)
Northwest Territories	5,380	990 (18.4)	5,300	1,070 (20.2)	5,110	1,210 (23.7)
Yukon Territory	3,480	970 (27.9)	3,400	1,120 (32.9)	3,400	1,070 (31.5)
Nunavut	4,410	160 (3.6)	4,360	170 (3.9)	4,550	160 (3.5)

(Table 2 is continued on the next page.)

TABLE 2 Continued

	2007 n = 3,455,390		2008 n = 3,447,140		2009 n = 3,437,270	
	Tax families	Claimed CFTC	Tax families	Claimed CFTC	Tax families	Claimed CFTC
	n	n (%)	n	n (%)	n	n (%)
Urban-rural residence—area size, by population^a						
≥500,000	1,819,730	577,750 (31.7)	1,824,170	649,570 (35.6)	1,821,660	670,880 (36.8)
100,000-499,999	595,030	209,260 (35.2)	590,800	229,030 (38.8)	587,590	233,240 (39.7)
30,000-99,999	307,530	97,720 (31.8)	306,590	108,210 (35.3)	303,420	110,450 (36.4)
15,000-29,999	112,230	34,450 (30.7)	113,030	39,530 (35.0)	114,740	42,080 (36.7)
1,000-14,999	488,230	136,900 (28.0)	482,070	153,750 (31.9)	473,590	157,510 (33.3)
<1,000	120,840	23,990 (19.9)	118,930	28,210 (23.7)	118,160	29,330 (24.8)
Missing	11,800	820 (6.9)	11,550	840 (7.3)	18,110	3,810 (21.0)
Parental age (years)						
<30	549,720	75,990 (13.8)	556,280	87,940 (15.8)	544,300	87,490 (16.1)
30-35	623,700	170,840 (27.4)	622,740	194,600 (31.2)	623,980	200,640 (32.2)
35-40	795,660	299,030 (37.6)	788,540	333,050 (42.2)	781,110	341,890 (43.8)
40-45	757,570	306,410 (40.4)	737,020	330,780 (44.9)	724,260	335,740 (46.4)
45-50	460,670	165,340 (35.9)	467,960	189,120 (40.4)	478,690	201,890 (42.2)
>50	268,070	63,290 (23.6)	274,710	73,660 (26.8)	284,920	79,650 (28.0)
Immigration status						
Non-immigrant	2,825,170	955,440 (33.8)	2,796,400	1,050,350 (37.6)	2,798,120	1,077,430 (38.5)
Immigrant	630,220	125,460 (19.9)	650,740	158,800 (24.4)	639,150	169,870 (26.6)
Recent immigrant	321,900	58,100 (18.0)	326,700	73,430 (22.5)	304,320	76,070 (25.0)
Family structure						
Couple	2,603,830	943,520 (36.2)	2,602,420	1,051,810 (40.4)	2,596,270	1,084,570 (41.8)
Single parent	851,570	137,370 (16.1)	844,720	157,330 (18.6)	840,990	162,740 (19.4)

(Table 2 is concluded on the next page.)

TABLE 2 Concluded

	2007 n = 3,455,390		2008 n = 3,447,140		2009 n = 3,437,270	
	Tax families		Tax families		Tax families	
	n	n (%)	n	n (%)	n	n (%)
At least one male child						
Yes	2,343,120	790,350 (33.7)	2,339,350	880,610 (37.6)	2,333,560	909,030 (39.0)
No	1,112,270	290,540 (26.1)	1,107,790	328,540 (29.7)	1,103,710	338,280 (30.6)
No. of children						
One	1,487,450	287,210 (19.3)	1,480,440	326,360 (22.0)	1,470,940	336,220 (22.9)
Two	1,405,490	576,510 (41.0)	1,401,900	642,430 (45.8)	1,398,180	662,110 (47.4)
Three	425,580	175,940 (41.3)	426,110	194,340 (45.6)	426,020	200,880 (47.2)
≥ Four	136,880	41,230 (30.1)	138,690	46,010 (33.2)	142,120	48,090 (33.8)

^a Area sizes of <1,000 are classified as rural.

Source: Statistics Canada, longitudinal administrative databank (LAD), federal income tax return data for 2007 through 2009 (derived from the Canada Revenue Agency's T1 family file [T1FF]). Sample counts were rounded to the nearest five. Totals and percentages are based on rounded counts.

The odds ratios reported in table 3 show that after controlling for household income, urban/rural residence, immigration status, parental age, and family composition, families living in Prince Edward Island, New Brunswick, Quebec, Manitoba, Saskatchewan, and British Columbia were all more likely to claim the CFTC than their counterparts in Ontario ($OR_{adj} = 1.04$ to 1.6 , $p < 0.01$). In contrast, families living in the Far North were significantly less likely to claim the CFTC. This was especially evident among families living in the Northwest Territories and Nunavut, where the odds of claiming the CFTC were approximately 60 percent and 90 percent lower, respectively, than the odds in Ontario.

The associations between family income, use of the CFTC, and the amount claimed through the CFTC are presented in table 4. After controlling for other covariates, household income was positively associated with the use of the CFTC, with the odds of claiming the CFTC being higher for each income group above \$20,000 per annum ($OR_{adj} = 3.1$ to 23.1 , $p < 0.01$).

The amount claimed through the CFTC generally increased with increasing income levels. For families earning \$100,000 to \$200,000 annually and those earning more than \$200,000, CFTC claims were, on average, \$125 and \$250 higher, respectively, than those for families with an annual income of \$20,000 or less. The only exception was among those families earning between \$20,000 and \$40,000 annually; in this group, the CFTC claims were approximately \$10 lower than those for families earning less than \$20,000 annually.

Table 5 documents the associations between the remaining independent variables of interest and use of the CFTC. The odds of claiming the CFTC decreased with decreasing community size, such that families living in smaller urban centres (those with a population of less than 100,000) and in rural areas (those with a population of less than 1,000) were 2 percent to 32 percent less likely to claim the CFTC than families living in cities with a population greater than 500,000. The amounts claimed for the CFTC decreased with decreasing community size, such that families living in rural areas claimed approximately \$90 less than those living in the largest urban centres.

After controlling for all other covariates, families headed by a single parent were approximately 8 percent more likely to use the CFTC than dual-parent families, and the amounts claimed by single-parent families was approximately \$25 higher on average ($OR_{adj} = 1.083$, $p < 0.01$). The odds of claiming the CFTC increased by approximately 35 percent with each additional child, and the amount claimed increased by approximately \$160. Having at least one male child in the family was also associated with higher odds of claiming the CFTC ($OR_{adj} = 1.126$, $p < 0.01$) and with a very small increase (\$3.50) in the amount of the CFTC claimed ($p < 0.01$).

Immigrants were significantly less likely to claim the CFTC than non-immigrants ($OR_{adj} = 0.67$, $p < 0.01$), and recent immigrants were less likely than other immigrants to claim the CFTC ($OR_{adj} = 0.98$, $p < 0.01$). The amount claimed by immigrant families was approximately \$20 less than that claimed by their non-immigrant counterparts, while the amount claimed by recent immigrants was approximately \$30 less than that claimed by other immigrants ($p < 0.01$).

TABLE 3 Use of the Children's Fitness Tax Credit, by Claimant's Province/ Territory of Residence, Adjusted for Selected Sociodemographic Factors (n = 3.142 million)

	β	SE	OR_{adj}	95% CI	p
Province/territory					
Newfoundland	-0.037	0.011	0.964	0.943-0.974	<0.01
Prince Edward Island	0.463	0.020	1.589	1.528-1.621	<0.01
Nova Scotia	-0.025	0.009	0.975	0.958-0.984	<0.01
New Brunswick	0.061	0.009	1.063	1.044-1.073	<0.01
Quebec	0.036	0.004	1.037	1.029-1.041	<0.01
Manitoba	0.185	0.007	1.203	1.187-1.212	<0.01
Saskatchewan	0.206	0.008	1.229	1.210-1.239	<0.01
Alberta	-0.148	0.004	0.862	0.856-0.866	<0.01
British Columbia	0.149	0.004	1.161	1.152-1.165	<0.01
Northwest Territories	-0.880	0.037	0.415	0.386-0.430	<0.01
Yukon Territory	-0.239	0.042	0.787	0.725-0.821	<0.01
Nunavut	-2.657	0.083	0.070	0.060-0.076	<0.01
<i>Ontario</i>	—	—	—	—	—

Note: Reference category is indicated by italics. All analyses adjusted for annual family income (negative; <\$20,000; \$20,000-\$40,000; \$40,000-\$60,000; \$60,000-\$80,000; \$80,000-\$100,000; \$100-\$200,000; >\$200,000), urban/rural residence (area size by population), immigration status (immigrant—yes/no; recent immigrant—yes/no), parental age (<30 years; 30-34 years; 35-39 years; 40-44 years; 45-49 years; ≥50 years), family composition (single parent—yes/no; male child in family—yes/no; number of children).

SE = standard error.

OR_{adj} = adjusted odds ratio.

CI = confidence interval.

Source: Statistics Canada, longitudinal administrative databank (LAD), federal income tax return data for 2007 through 2009 (derived from the Canada Revenue Agency's T1 family file [T1FF]).

Finally, the odds of claiming the CFTC were significantly higher among families that had previously claimed the credit ($OR_{adj} = 13.27$), with the amount of the claim being approximately \$160 higher relative to families with no previous claims ($p < 0.01$). However, the analysis also shows that after controlling for all other covariates, the likelihood of claiming the CFTC was approximately 7 percent lower and the amount claimed approximately \$50 lower with each passing year ($p < 0.01$).

Information relating to parents' awareness and perceptions of the CFTC was collected in the national survey conducted through the CFLRI. The survey data are presented in tables 6 through 10 and figures 1 and 2.

Descriptive statistics pertaining to the survey population are provided in table 6. Our analysis shows that approximately 65 percent of respondents reported that they had heard of the CFTC. Of those familiar with the CFTC, the majority were female (57.9 percent), were between 35 and 49 years of age (70.8 percent), and had at least some post-secondary education (83.0 percent). Over 40 percent of respondents familiar with the CFTC reported annual household incomes greater than \$100,000.

TABLE 4 Relationship Between Family Income and Children's Fitness Tax Credit (CFTC) Use and CFTC Claim Amount, 2007-2009

	Use of CFTC ^a (<i>n</i> = 3,142 million)				Amount of CFTC claim ^b (<i>n</i> = 1,241 million)			
	β	SE	OR _{adj}	95% CI	<i>p</i>	β	SE	<i>p</i>
Annual family income								
≥ \$200,000.....	3.141	0.012	23.127	22.589-23.677	<0.01	253.92	2.822	<0.01
\$100,000-\$199,999.....	2.866	0.010	17.567	17.226-17.914	<0.01	125.74	2.607	<0.01
\$80,000-\$99,999.....	2.507	0.010	12.268	12.030-12.511	<0.01	48.66	2.643	<0.01
\$60,000-\$79,999.....	2.195	0.010	8.980	8.806-9.156	<0.01	15.16	2.629	<0.01
\$40,000-\$59,999.....	1.802	0.010	6.062	5.944-6.182	<0.01	-3.49	2.616	>0.05
\$20,000-\$39,999.....	1.125	0.010	3.080	3.020-3.141	<0.01	-10.33	2.696	<0.01
<\$20,000.....	—	—	—	—	—	—	—	—

Note: Reference category is indicated by italics. All analyses adjusted for urban/rural residence (population <1,000; 1,000-14,999; 15,000-29,999; 30,000-99,999; 100,000-499,999; > 500,000), immigration status (immigrant—yes/no; recent immigrant—yes/no), parental age (<30 years; 30-34 years; 35-39 years; 40-44 years; 45-49 years; ≥50 years), family composition (single parent—yes/no; male child in family—yes/no; number of children), previous CFTC claims (yes/no) and time (years).

^a Analyzed using multiple logistic regression.

^b Analyzed using multiple linear regression.

SE = standard error.

OR_{adj} = adjusted odds ratio.

CI = confidence interval.

Source: Statistics Canada, longitudinal administrative databank (LAD), federal income tax return data for 2007 through 2009 (derived from the Canada Revenue Agency's T1 family file [TIFF]).

TABLE 5 Relationship Between Children's Fitness Tax Credit (CFTC) Claims and Selected Sociodemographic Characteristics, 2007-2009

	Use of CFTC ^a (n = 3,142 million)					Amount of CFTC claim ^b (n = 1,241 million)				
	β	SE	OR _{adj}	95% CI	p	β	SE	β	SE	p
Area size, by population ^c										
<1,000	-0.384	0.008	0.681	0.671-0.692	<0.01	-92.25	1.953	-92.25	1.953	<0.01
1,000-14,999	-0.132	0.004	0.876	0.869-0.883	<0.01	-58.15	0.954	-58.15	0.954	<0.01
15,000-29,999	-0.061	0.008	0.941	0.926-0.956	<0.01	-19.01	1.707	-19.01	1.707	<0.01
30,000-99,999	-0.022	0.005	0.978	0.969-0.988	<0.01	-29.29	1.084	-29.29	1.084	<0.01
100,000-499,999	0.086	0.004	1.090	1.081-1.098	<0.01	10.13	0.819	10.13	0.819	>0.05
≥500,000	—	—	—	—	—	—	—	—	—	—
Parental age (years)										
≥50	0.100	0.007	1.105	1.090-1.120	<0.01	94.40	1.477	94.40	1.477	<0.01
45-49	0.478	0.006	1.612	1.594-1.632	<0.01	116.60	1.343	116.60	1.343	<0.01
40-44	0.615	0.006	1.850	1.828-1.872	<0.01	106.18	1.292	106.18	1.292	<0.01
35-39	0.552	0.006	1.737	1.716-1.757	<0.01	25.25	1.285	25.25	1.285	<0.01
30-34	0.274	0.006	1.315	1.300-1.331	<0.01	-60.05	1.353	-60.05	1.353	<0.01
<30	—	—	—	—	—	—	—	—	—	—
Immigrant										
Yes	-0.394	0.005	0.674	0.668-0.681	<0.01	-20.19	1.202	-20.19	1.202	<0.01
No	—	—	—	—	—	—	—	—	—	—
Recent immigrant										
Yes	-0.017	0.007	0.983	0.970-0.997	<0.01	-31.25	1.594	-31.25	1.594	<0.01
No	—	—	—	—	—	—	—	—	—	—

(Table 5 is concluded on the next page.)

TABLE 5 Concluded

	Use of CFTC ^a (<i>n</i> = 3.142 million)				Amount of CFTC claim ^b (<i>n</i> = 1.241 million)			
	β	SE	<i>OR</i> _{adj}	95% CI	<i>p</i>	β	SE	<i>p</i>
Family structure								
Single parent	0.080	0.005	1.083	1.073-1.094	<0.01	25.25	1.147	<0.01
<i>Couple</i>	—	—	—	—	—	—	—	—
Male child in family	0.119	0.003	1.126	1.120-1.133	<0.01	3.49	0.654	<0.01
<i>Yes</i>	—	—	—	—	—	—	—	—
<i>No</i>	—	—	—	—	—	—	—	—
No. of children	0.296	0.002	1.344	1.339-1.349	<0.01	162.77	0.519	<0.01
Prior CFTC claim								
<i>Yes</i>	2.586	0.004	13.27	13.173-13.381	<0.01	159.57	0.754	<0.01
<i>No</i>	—	—	—	—	—	—	—	—
Time	-0.511	0.002	0.993	0.598-0.602	<0.01	-50.88	0.457	<0.01

Note: Reference category is indicated by italics. Analyses also adjusted for annual family income (negative; <\$20,000; \$20,000-\$40,000; \$40,000-\$60,000; \$60,000-\$80,000; \$80,000-\$100,000; \$100,000-\$200,000; >\$200,000).

^a Analyzed using multiple logistic regression.

^b Analyzed using multiple linear regression.

^c Area sizes of <1,000 are classified as rural.

SE = standard error.

*OR*_{adj} = adjusted odds ratio.

CI = confidence interval.

Source: Statistics Canada, longitudinal administrative databank (LAD), federal income tax return data for 2007 through 2009 (derived from the Canada Revenue Agency's T1 family file [TIFF]).

TABLE 6 Awareness of the Children's Fitness Tax Credit (CFTC) Among Survey Respondents, Selected Sociodemographic Characteristics (n = 2,394)

	Aware ^a (n = 1,565)		Not aware ^a (n = 829)	
	%	95% CI	%	95% CI
Gender				
Female	57.9	54.5-61.1	45.9	41.3-50.6
Male	42.1	38.9-45.5	54.1	49.4-58.7
Age (years)				
≥50	15.0	12.7-17.7	19.8	16.4-23.7
45-49	25.1	22.3-28.1	18.4	15.1-22.3
40-44	25.2	22.5-28.1	18.8	15.3-23.0
35-39	20.5	18.1-23.2	18.5	15.2-22.4
30-34	10.6	8.8-12.7	15.3	12.2-18.9
<30	3.6	2.2-6.0	9.2	6.3-13.1
Education				
University	46.3	43.0-49.7	22.3	18.7-26.4
College	36.7	33.5-40.0	33.8	29.5-38.3
Secondary or less	16.9	14.5-19.7	43.9	39.2-48.7
Annual household income				
≥ \$100,000	41.3	37.8-44.9	17.0	13.7-21.0
\$90,000-\$99,999	7.8	6.2-9.9	5.8	3.7-9.0
\$80,000-\$89,999	9.5	7.6-11.8	7.3	5.2-10.1
\$70,000-\$79,999	9.7	7.7-12.1	11.2	8.3-14.8
\$60,000-\$69,999	6.3	4.9-8.1	10.9	7.9-14.8
\$50,000-\$59,999	7.5	5.9-9.6	8.8	6.4-12.1
\$40,000-\$49,999	7.4	5.7-9.6	9.9	7.3-13.4
<\$40,000	10.5	8.3-13.3	29.1	24.6-34.1

^a All proportions are weighted proportions.
 CI = confidence interval.

Source: Canadian Fitness and Lifestyle Research Institute, Physical Activity Monitor, 2009 and 2010, responses to questions about the children's fitness tax credit.

Multivariable logistic regression analyses showed that gender, age, education, and income were all significantly associated with CFTC awareness (see table 7). Women, parents between 40 and 49 years of age, those with post-secondary education, and those earning more than \$40,000 annually were all more likely to be familiar with the CFTC ($OR_{adj} = 1.791$ to 4.593 , $p < 0.01$).

Parental perceptions of the importance of the CFTC are highlighted in figure 1. Most survey respondents rated the CFTC as very important (58.8 percent) or important (17.3 percent) to increasing physical activity among Canadian children. As shown in table 8, regression analyses revealed that gender and parental education were both significantly associated with the perception that the CFTC is important to increasing children's physical activity. Women were approximately 50 percent more likely than men to view the CFTC as at least somewhat important, and university-educated parents were approximately 35 percent less likely than those with no post-secondary

TABLE 7 Relationship Between Selected Sociodemographic Characteristics and Parental Awareness of the Children's Fitness Tax Credit ($n = 2,394$)

	β	SE	OR_{adj}	95% CI
Gender				
Female	0.583	0.098	1.791**	1.479-2.168
Male	<i>ref</i>	—	<i>ref</i>	—
Age (years)				
≥50	0.193	0.224	1.213	0.783-1.880
45-49	0.625	0.220	1.868*	1.214-2.873
40-44	0.697	0.219	2.008*	1.309-3.082
35-39	0.420	0.221	1.522	0.987-2.349
30-34	0.111	0.230	1.118	0.712-1.754
<30	<i>ref</i>	—	<i>ref</i>	—
Annual household income				
≥\$100,000	1.525	0.165	1.827*	1.229-2.717
\$90,000-\$99,999	1.003	0.229	2.151**	1.426-3.245
\$80,000-\$89,999	1.010	0.210	1.424	0.955-2.123
\$70,000-\$79,999	0.711	0.193	2.036**	1.395-2.972
\$60,000-\$69,999	0.353	0.204	2.746**	1.819-4.145
\$50,000-\$59,999	0.766	0.210	2.727**	1.742-4.269
\$40,000-\$49,999	0.603	0.202	4.593**	3.324-6.347
<\$40,000	<i>ref</i>	—	<i>ref</i>	—
Parent's education				
University	1.247	0.124	3.482**	2.73-4.435
College	0.808	0.115	2.244**	1.792-2.811
Secondary or less	<i>ref</i>	—	<i>ref</i>	—

Note: Reference group indicated with italics.

SE = standard error.

OR_{adj} = adjusted odds ratio.

CI = confidence interval.

** $p \leq 0.001$.

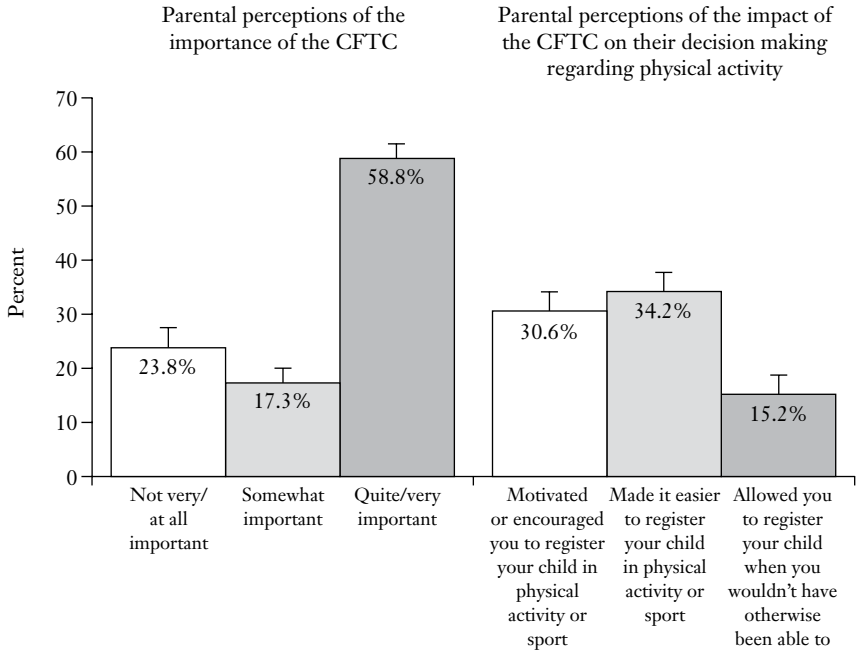
* $p < 0.01$.

Source: Canadian Fitness and Lifestyle Research Institute, Physical Activity Monitor, 2009 and 2010, responses to questions about the children's fitness tax credit.

education to have this perception. With the exception of respondents at the \$50,000-\$59,999 income level ($OR_{adj} = 2.333$, $p < 0.05$), perceived importance of the CFTC to increasing children's physical activity was not significantly different for households earning more than \$40,000 annually and those earning less ($OR_{adj} = 0.613$ to 1.199, $p < 0.05$).

Figure 1 also includes descriptive information regarding parents' perceptions of the influence of the CFTC on their decision making related to their children's physical activity. When asked whether the CFTC provided motivation to register their child in a physical activity program, approximately 30 percent of parents answered affirmatively, and more than one-third (34.2 percent) perceived that the CFTC had made it financially easier for them to register their children in organized physical

FIGURE 1 Parental Perceptions of the Children's Fitness Tax Credit (CFTC)^a (n = 1,565)



Note: The cap on each box signifies the upper limit of the confidence interval (CI) for the estimate.

^a Based on responses to question 7 of the CFTC survey.

Source: Canadian Fitness and Lifestyle Research Institute, Physical Activity Monitor, 2009 and 2010, responses to questions about the children's fitness tax credit.

activity. Overall, fewer than 16 percent of parents agreed that the CFTC enabled them to register their children in a physical activity program when they otherwise would have been unable to do so. As shown in table 9, gender, age, and household income were all significantly associated with parental perceptions of the influence of the CFTC, while education was not. Women were significantly less likely than men to report that the CFTC had motivated them to register their children in physical activity programs ($OR_{adj} = 0.792, p < 0.05$). Parents over the age of 30 were more likely than younger parents to report that the CFTC provided motivation ($OR_{adj} = 2.624$ to $7.449, p < 0.05$), facilitated their decisions²³ ($OR_{adj} = 1.541$ to $3.333, p < 0.05$) and made it possible to enrol their child in a physical activity program ($OR_{adj} = 4.924$ to $9.566, p < 0.05$). Parents with annual household incomes of

23 Except for parents aged 45-49.

TABLE 8 Relationship Between Selected Sociodemographic Characteristics and Parental Perception of the Importance of the Children's Fitness Tax Credit (CFTC)^a (n = 1,565)

	β	SE	OR_{adj}	95% CI
Gender				
Female	0.430	0.125	1.537**	1.203-1.965
Male	<i>ref</i>	—	<i>ref</i>	—
Age (years)				
≥50	-0.302	0.386	0.739	0.347-1.574
45-49	-0.293	0.375	0.746	0.358-1.555
40-44	0.030	0.375	1.030	0.494-2.150
35-39	-0.062	0.382	0.940	0.445-1.986
30-34	0.489	0.421	1.630	0.714-3.724
<30	<i>ref</i>	—	<i>ref</i>	—
Annual household income				
≥\$100,000	-0.306	0.250	0.736	0.451-1.203
\$90,000-\$99,999	-0.205	0.324	0.815	0.432-1.537
\$80,000-\$89,999	0.181	0.327	1.199	0.632-2.273
\$70,000-\$79,999	0.098	0.318	1.103	0.592-2.056
\$60,000-\$69,999	-0.043	0.351	0.958	0.481-1.906
\$50,000-\$59,999	0.847	0.415	2.333*	1.035-5.261
\$40,000-\$49,999	-0.489	0.318	0.613	0.329-1.143
<\$40,000	<i>ref</i>	—	<i>ref</i>	—
Parent's education				
University	-0.428	0.183	0.652*	0.455-0.933
College	0.110	0.193	1.117	0.765-1.629
Secondary or less	<i>ref</i>	—	<i>ref</i>	—

Note: Reference group indicated with italics.

^a As indicated by a ranking of "somewhat important" (3) or higher on the scale described in question 6a of the CFTC survey: "[H]ow important do you think the child fitness tax credit is to increasing physical activity among Canadian children?"

SE = standard error.

OR_{adj} = adjusted odds ratio.

CI = confidence interval.

** $p \leq -0.001$.

* $p < 0.05$.

Source: Canadian Fitness and Lifestyle Research Institute, Physical Activity Monitor, 2009 and 2010, responses to questions about the children's fitness tax credit.

TABLE 9 Relationship Between Selected Sociodemographic Characteristics and Parental Perceptions of the Influence of the Children's Fitness Tax Credit (CFTC) on Decision Making^a (n = 1,565)

	Motivated or encouraged parents to register child in physical activity/sport program		Made it easier for parents to register child in physical activity/sport program		Allowed parents to register child in physical activity/sport program when they otherwise would not	
	OR _{adj}	95% CI	OR _{adj}	95% CI	OR _{adj}	95% CI
Gender						
Female	0.792*	0.629-0.996	0.960	0.768-1.199	1.144	0.843-1.552
Male	<i>ref</i>	—	<i>ref</i>	—	<i>ref</i>	—
Age (years)						
≥50	2.624*	1.097-6.280	2.273*	1.117-4.626	8.153***	2.324-28.602
45-49	3.020*	1.292-7.063	1.541	0.769-3.087	4.924*	1.413-17.156
40-44	3.664**	1.574-8.525	2.245*	1.128-4.467	5.036*	1.450-17.494
35-39	6.496***	2.782-15.167	2.874**	1.436-5.754	9.566***	2.767-33.077
30-34	7.449***	3.120-17.784	3.333***	1.621-6.852	7.237**	2.053-25.515
<30	<i>ref</i>	—	<i>ref</i>	—	<i>ref</i>	—
Annual household income						
≥\$100,000	0.565**	0.367-0.868	0.767	0.501-1.174	0.538***	0.100-0.295
\$90,000-\$99,999	0.897	0.515-1.562	1.109	0.639-1.924	0.551***	0.107-0.515
\$80,000-\$89,999	0.867	0.514-1.462	1.815*	1.091-3.019	1.211	0.414-1.304
\$70,000-\$79,999	0.967	0.572-1.632	1.155	0.689-1.937	0.512*	0.276-0.947
\$60,000-\$69,999	1.037	0.582-1.848	1.845*	1.053-3.233	0.735	0.653-2.246
\$50,000-\$59,999	1.121	0.642-1.956	1.473	0.850-2.552	0.235	0.290-1.050
\$40,000-\$49,999	0.548*	0.304-0.986	0.936	0.538-1.627	0.172*	0.287-1.008
<\$40,000	<i>ref</i>	—	<i>ref</i>	—	<i>ref</i>	—

(Table 9 is concluded on the next page.)

TABLE 9 Concluded

	Motivated or encouraged parents to register child in physical activity/sport program		Made it easier for parents to register child in physical activity/sport program		Allowed parents to register child in physical activity/sport program when they otherwise would not	
	<i>OR_{adj}</i>	95% <i>CI</i>	<i>OR_{adj}</i>	95% <i>CI</i>	<i>OR_{adj}</i>	95% <i>CI</i>
Parent's education						
University.....	0.762	0.561-1.079	0.774	0.566-1.058	0.571	0.383-0.852
College.....	0.778	0.551-1.053	0.746	0.544-1.025	0.621	0.420-0.919
<i>Secondary or less</i>	<i>ref</i>	—	<i>ref</i>	—	<i>ref</i>	—

Note: Reference group indicated with italics.

^a Based on responses to question 7 of the CFTC survey.

OR_{adj} = adjusted odds ratio.

CI = confidence interval.

*** *p* ≤ 0.001.

** *p* ≤ 0.01.

* *p* ≤ 0.05.

Source: Canadian Fitness and Lifestyle Research Institute, Physical Activity Monitor, 2009 and 2010, responses to questions about the children's fitness tax credit.

\$40,000–\$49,999 or greater than \$100,000 per annum were significantly less likely than those with annual household incomes below \$40,000 to report that the CFTC provided incentives to register their children in physical activity programs ($OR_{adj} = 0.548, p < 0.05$; and $0.565, p < 0.01$, respectively). Parents with annual household incomes between \$60,000–\$69,999 and \$80,000–\$89,999 were significantly more likely than parents with annual household incomes below \$40,000 to feel that the CFTC facilitated registering their child in physical activity programs. Generally, parents with annual household incomes greater than \$40,000 were less likely than those with annual household incomes below \$40,000 to agree that the CFTC allowed them to register their child in a program when they would not have otherwise been able to do so ($OR_{adj} = 0.172$ to $0.538, p < 0.05$).

Parental ratings of the importance of selected strategies for increasing their child's participation in physical activity are presented in figure 2. Facilities and convenient and accessible programming were rated as very important by more than 70 percent of parents. Close to half (48.4 percent) perceived the CFTC as being very important, while 22.3 percent felt it was not at all important.

The results of regression analyses examining associations between gender, age, education, and income and parental perceptions of high importance of these strategies are provided in table 10. Women were significantly more likely than men to rate tax credits/benefits, coaching, programming, and opportunities for free play as very important to increasing children's physical activity ($OR_{adj} = 1.422$ to $1.952, p < 0.001$). Parents 30 years of age and older were more likely to rate tax credits/benefits, facilities, and coaching, and less likely to rate programming, school and after-school programs, and opportunities for free play as very important, compared to parents under the age of 30 ($OR_{adj} = 0.626$ to $0.709, p < 0.01$). University-educated parents were less likely than those without post-secondary education to perceive tax credits/benefits, coaching, and school programs as being highly important, while college-educated parents were more likely than parents without post-secondary education to rate opportunities for free play as very important to increasing children's physical activity ($OR_{adj} = 1.370, p < 0.05$).

DISCUSSION

While, as noted earlier, there have been other evaluations of the CFTC, to our knowledge this study is the first to examine the use of the CFTC using federal tax claims data. The findings provide important information regarding the use of the CFTC and raise questions regarding the equity and potential effectiveness of the program in promoting physical activity for children and youth.

Our analysis reveals disparities in the use of the CFTC across family composition, urban/rural and provincial/territorial residence, immigration status, and household income, even after controlling for confounding variables. Contrary to what might be expected, families headed by a single parent were more likely than dual-parent families to make use of the CFTC, perhaps reflecting increased motivation to claim because single parents bear a relatively greater financial burden in enrolling their children in non-subsidized programs. The findings also show that families with at

TABLE 10 Relationship Between Selected Sociodemographic Characteristics and Parental Perceptions of the Importance of Selected Strategies for Increasing Physical Activity^a (n = 1,565)

	Tax credits or benefits	Sport and recreation facilities	Coaching or instruction	Convenient and accessible programming	School or after- school programs	Opportunities for free play
	<i>OR_{adj}</i> (95% CI)	<i>OR_{adj}</i> (95% CI)	<i>OR_{adj}</i> (95% CI)	<i>OR_{adj}</i> (95% CI)	<i>OR_{adj}</i> (95% CI)	<i>OR_{adj}</i> (95% CI)
Gender						
Female	1.550*** (1.251-1.921)	1.147 (1.203-1.965)	1.422*** (1.148-1.761)	1.952*** (1.547-2.462)	1.547 (1.248-1.917)	1.422*** (1.146-1.765)
Male	<i>ref</i>	<i>ref</i>	<i>ref</i>	<i>ref</i>	<i>ref</i>	<i>ref</i>
Age (years)						
≥ 50	2.782** (1.457-5.313)	1.286 (0.688-2.404)	2.543** (1.374-4.705)	0.345** (0.150-0.794)	0.186*** (0.075-0.461)	0.286** (0.131-0.623)
45-49	2.049* (1.098-3.823)	1.884* (1.028-3.455)	2.138* (1.187-3.851)	0.409* (0.180-0.925)	0.164*** (0.067-0.400)	0.334** (0.156-0.716)
40-44	2.449** (1.314-4.564)	2.024* (1.104-3.712)	1.982* (1.103-3.563)	0.396* (0.176-0.893)	0.208*** (0.085-0.505)	0.427 (0.199-0.916)
35-39	2.600** (1.384-4.885)	1.817 (0.982-3.361)	1.699 (0.937-3.078)	0.478 (0.209-1.093)	0.146*** (0.060-0.357)	0.411* (0.190-0.888)
30-34	3.262*** (1.679-6.339)	2.179* (1.125-4.222)	2.054* (1.092-3.863)	0.468 (0.198-1.106)	0.243** (0.097-0.612)	0.584 (0.260-1.312)
< 30	<i>ref</i>	<i>ref</i>	<i>ref</i>	<i>ref</i>	<i>ref</i>	<i>ref</i>

(Table 10 is continued on the next page.)

TABLE 10 Continued

	Tax credits or benefits	Sport and recreation facilities	Coaching or instruction	Convenient and accessible programming	School or after-school programs	Opportunities for free play
	<i>OR_{adj}</i> (95% <i>CI</i>)	<i>OR_{adj}</i> (95% <i>CI</i>)	<i>OR_{adj}</i> (95% <i>CI</i>)	<i>OR_{adj}</i> (95% <i>CI</i>)	<i>OR_{adj}</i> (95% <i>CI</i>)	<i>OR_{adj}</i> (95% <i>CI</i>)
Annual household income						
≥\$100,000	0.492** (0.327-0.741)	0.867 (0.561-1.339)	0.886 (0.591-1.328)	1.023 (0.661-1.582)	0.892 (0.584-1.364)	0.471*** (0.301-0.738)
\$90,000-\$99,999	0.626 (0.367-1.068)	0.777 (0.432-1.336)	0.717 (0.423-1.216)	0.771 (0.439-1.351)	0.791 (0.458-1.367)	0.429** (0.243-0.758)
\$80,000-\$89,999	0.930 (0.559-1.546)	1.016 (0.588-1.757)	0.900 (0.544-1.487)	2.007* (1.105-3.646)	0.797 (0.474-1.341)	0.636 (0.367-1.100)
\$70,000-\$79,999	0.749 (0.452-1.241)	2.255** (1.222-4.160)	1.189 (0.715-1.977)	2.182** (1.198-3.974)	0.896 (0.530-1.516)	0.624 (0.361-1.078)
\$60,000-\$69,999	0.562* (0.321-0.984)	1.137 (0.615-2.100)	1.699 (0.948-3.044)	0.959 (0.525-1.752)	0.632 (0.354-1.127)	0.802 (0.430-1.496)
\$50,000-\$59,999	1.465 (0.831-2.581)	0.956 (0.534-1.711)	1.576 (0.896-2.773)	2.138* (1.099-4.157)	1.037 (0.586-1.832)	0.650 (0.362-1.166)
\$40,000-\$49,999	0.442** (0.2258-0.756)	0.461** (0.266-0.799)	0.641 (0.377-1.089)	0.586 (0.337-1.019)	0.391*** (0.226-0.677)	0.591 (0.331-1.053)
< \$40,000	<i>ref</i>	<i>ref</i>	<i>ref</i>	<i>ref</i>	<i>ref</i>	<i>ref</i>

(Table 10 is concluded on the next page.)

TABLE 10 Concluded

	Tax credits or benefits	Sport and recreation facilities	Coaching or instruction	Convenient and accessible programming	School or after-school programs	Opportunities for free play
	<i>OR_{adj}</i> (95% <i>CI</i>)	<i>OR_{adj}</i> (95% <i>CI</i>)	<i>OR_{adj}</i> (95% <i>CI</i>)	<i>OR_{adj}</i> (95% <i>CI</i>)	<i>OR_{adj}</i> (95% <i>CI</i>)	<i>OR_{adj}</i> (95% <i>CI</i>)
Parent's education						
University.....	0.626** (0.460-0.851)	0.907 (0.645-1.276)	0.626** (0.460-0.851)	0.980 (0.705-1.363)	0.709* (0.518-0.969)	1.349 (0.989-1.878)
College.....	0.977 (0.716-1.334)	0.729 (0.522-1.019)	0.977 (0.716-1.334)	1.263 (0.900-1.773)	0.832 (0.605-1.143)	1.370* (1.000-1.878)
Secondary or less.....	<i>ref</i>	<i>ref</i>	<i>ref</i>	<i>ref</i>	<i>ref</i>	<i>ref</i>

^a Based on responses to question 6b of the children's fitness tax credit survey.

OR_{adj} = adjusted odds ratio.

CI = confidence interval.

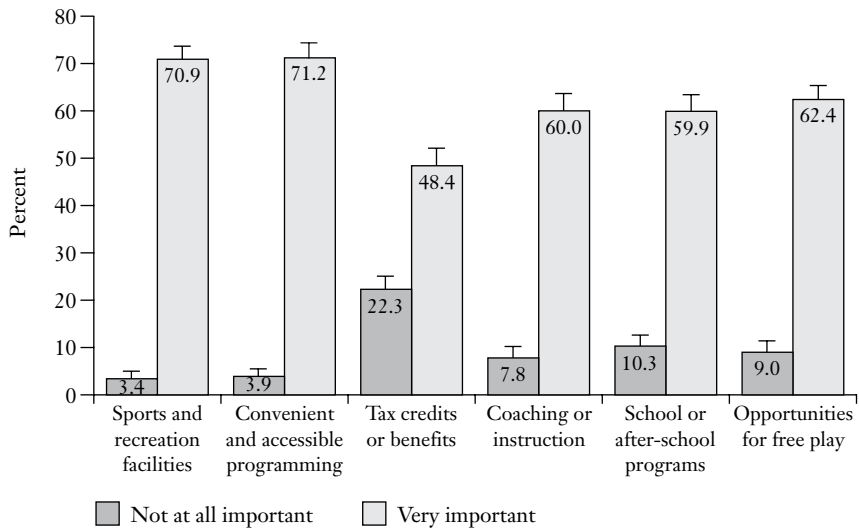
*** $p \leq 0.001$.

** $p \leq 0.01$.

* $p \leq 0.05$.

Source: Canadian Fitness and Lifestyle Research Institute, Physical Activity Monitor, 2009 and 2010, responses to questions about the children's fitness tax credit.

FIGURE 2 Proportion of Parents Rating Selected Strategies as Most Important or Least Important to Increasing Children's Physical Activity^a (n = 1,565)



Note: The cap on each box signifies the upper limit of the confidence interval (CI) for the estimate.

^a Based on responses to question 6b of the children's fitness tax credit survey.

Source: Canadian Fitness and Lifestyle Research Institute, Physical Activity Monitor, 2009 and 2010, responses to questions about the children's fitness tax credit.

least one male child were more likely to claim the CFTC, providing support for concerns expressed shortly after the credit was introduced that it did not adequately take into account gender differences in children's participation in physical activities, and consequently would benefit families with boys more than those with girls.²⁴ The lower claim amounts by parents of a single child may be reflective of a child that was either very young or close to 18, who in both cases may be less likely to be enrolled in organized physical activity. In the case of very young children, it may also be that the costs of some physical activity programs designed for young children are lower than those geared toward older children.

Place of residence, in terms of both provincial/territorial jurisdiction and the urban/rural nature of the community, was also significantly associated with use of the CFTC. Of particular concern is the low uptake of the CFTC among those living in the Far North. Families in the Northwest Territories and Nunavut were much less likely to claim the CFTC than their counterparts in other jurisdictions, including

24 Sheila Block, "The Children's Fitness Tax Credit: Less Than Meets the Eye" (2007) 9:3/4 *Canadian Women's Health Network* 20-21.

Yukon Territory. At the time the CFTC came into effect, Yukon Territory implemented a matching, territorial-level tax credit, which could partly explain the large disparity in CFTC claims between Yukon and the other two territories. However, there are other factors that may contribute to the low level of CFTC use in the Far North, including a lack of awareness of the CFTC, a lack of eligible physical activity and sports programs, a scarcity of qualified program leaders, and inadequate facilities.²⁵ The same issues also affect families living in rural areas in other regions of Canada and may partly explain why rural families were less likely to make use of the CFTC than their urban counterparts. The lower claim amounts among smaller communities may indicate lower use of programs, as well as lower costs of programming. Targeted efforts to promote the CFTC to taxpayers in the Far North and rural Canada may encourage greater use of the credit in the future. However, this would likely address only one part of the problem. Efforts are also needed to increase the number and the diversity of physical activity and sports opportunities that are available to northern and rural children and youth. These may include building new or improving existing facilities; training parents, youth, and other community members to be coaches or physical activity leaders; and forging partnerships between community groups to improve community capacity related to physical activity and sports.²⁶ It is not clear whether a greater uptake of the CFTC would require increasing the size of the credit, increasing awareness of the credit, increasing facilities and programming, or some combination of these.

Immigration status appears to affect CFTC claims, with recent immigrants being less likely than other immigrants to claim the CFTC. This could indicate limited financial resources or less awareness of the credit. Educational campaigns targeting recent immigrants could be useful in increasing takeup among members of this group.

Arguably, the strongest criticism of the CFTC to date has been that it favours families with higher household incomes.²⁷ Our findings provide strong objective evidence that these concerns around equity are warranted. Differences in the probability of using the CFTC become more evident with variations in family income. Furthermore, our analyses show that the amount of CFTC claims tends to increase with family income; thus, those in higher income groups obtain greater benefit

25 Patricia A. Harrison and Gopalakrishnan Narayan, "Differences in Behavior, Psychological Factors, and Environmental Factors Associated with Participation in School Sports and Other Activities in Adolescence" (2003) 73:3 *Journal of School Health* 113-20. See also Warren Clark, "Kids' Sports" (2008) 85 *Canadian Social Trends* 54-61.

26 S. Walia and B. Leipert, "Perceived Facilitators and Barriers to Physical Activity for Rural Youth: An Exploratory Study Using Photovoice" (2012) 12 *Rural and Remote Health* article no. 1842 (www.rrh.org.au/publishedarticles/article_print_1842.pdf). See also Clark, *supra* note 25; and Justin B. Moore, Stephanie B. Jilcott, Kindal A. Shores, Kelly R. Evenson, Ross C. Brownson, and Lloyd F. Novick, "A Qualitative Examination of Perceived Barriers and Facilitators of Physical Activity for Urban and Rural Youth" (2010) 25:2 *Health Education Research* 355-67.

27 See Faulkner et al., *supra* note 3; von Tigerstrom et al., *ibid.*; Larre, *supra* note 7; Spence et al., *supra* note 6; and Block, *supra* note 14.

from the credit in two respects: they are more likely to claim the credit, and they receive a higher amount when they do make a claim (compared to lower-income claimants). Spence et al. have recommended (as have others) that alternative solutions, such as sponsorships or direct subsidies, may be preferable to tax credits to promote physical activity among low-income children.²⁸

The multiyear analysis shows that the total number of families using the CFTC increased each year, and those families that had previously used the credit were more likely to use it in subsequent years, though the odds of claiming the CFTC and the amounts claimed decreased over time. The finding that families using the credit claimed lower amounts in subsequent years could indicate that awareness of the CFTC may not necessarily increase participation in organized physical activity programs beyond the initial year of use. Together, these findings also highlight the utility of going beyond describing rates of use in understanding the implications of the CFTC policy.

When assessing the CFTC, it is also important to consider the public perception of its influence. The findings in this regard are somewhat mixed, particularly if income is not taken into consideration. Overall, approximately one-third of the parents surveyed felt that the CFTC provided motivation or made it easier to register their children in physical activity or sports programs. At first glance, our findings seem to suggest that the CFTC provided little actual assistance in terms of facilitating access to programs, given that just 15 percent of respondents agreed that the CFTC allowed them to register their children in programs that they would not have otherwise been able to access. However, if we focus on the group most in need of assistance—families earning less than \$40,000 annually—the CFTC was perceived to facilitate access to otherwise inaccessible physical activity programs for close to 30 percent of those parents, compared to 6.5 percent of parents with annual household incomes greater than \$100,000. This suggests that the CFTC was an important or instrumental factor in decision making around physical activity for almost one-third of the families that it was intended to help. However, the LAD data indicate that rates of claiming and claim amounts are relatively low in the lower income groups, so it seems that individuals' perceptions of the assistance that they are receiving may be higher than their actual rates of use. It is also important to note that the survey data provide important insights into the perceived importance of other factors that may affect physical activity participation, such as availability of facilities and programs. The results suggest that attention to these factors is also needed, both to increase the likelihood that the financial incentive of the CFTC can be effective in enabling participation, and independently as a means of ensuring access to physical activity opportunities for all Canadians.

Making the CFTC more useful to lower-income groups could reduce financial barriers to participation in organized physical activity programs and thereby increase

28 Spence et al., *supra* note 6, at 4-5. Also see Larre, *supra* note 7, at 12:10-11; and von Tigerstrom et al., *supra* note 3, at e13.

rates of physical activity among this group. It remains unclear whether the availability of the CFTC actually does increase participation in physical activity. If it does, at least to some extent, the credit will be more effective if it is used by those who are likely to face the greatest financial barriers to participation—that is, those in lower income groups. The distribution of claims across income groups is therefore one factor to consider in evaluating the potential impact of the CFTC. In addition, studies have recognized the importance of the equitable distribution of tax expenditures.²⁹ Therefore, if the CFTC is to remain a part of the tax system, equity concerns should lead policy makers to consider steps to increase uptake among lower income earners.

One alternative would be to restructure the credit in a way that would allow lower-income parents to access it more readily or more immediately, so that they might then perceive it as a tangible benefit.³⁰ Currently, the CFTC is a non-refundable credit; consequently, some families that might otherwise claim it may be unable to do so because they do not earn enough income. This would be the case for most families with annual household incomes under \$20,000.³¹ Furthermore, the modest amount of the credit and/or the delay between incurring the expense and receiving the tax reduction may reduce its usefulness to those who are eligible.³² Saskatchewan's active families benefit (for example) is a refundable credit where the benefit is equal to the full amount of fees paid up to a certain limit, rather than a percentage.³³ Making the CFTC refundable would allow low income earners who do not owe tax to receive a direct benefit from the credit, and thus could be expected to increase takeup among low-income families. Furthermore, changing the credit to cover the cost of the program up to a specified limit, as opposed to a percentage (currently a maximum of 15 percent), would cover a larger proportion of the cost of programs—perhaps even the full cost of less expensive programs—and could thereby increase takeup by lower-income families.³⁴ It would be possible to take a more revenue-neutral approach to this change by lowering the credit amount to \$75. Finally, if the scope of programs eligible for the CFTC were expanded to include less structured, less costly, family-oriented activities (for example, using public swimming pools and

29 Claire F.L. Young, "(In)visible Inequalities: Women, Tax and Poverty" (1995) 27:1 *Ottawa Law Review* 99-127. See also Frances Woolley, "Policy Forum: Liability Without Control—The Curious Case of Pension Income Splitting" (2007) 55:3 *Canadian Tax Journal* 603-25.

30 See von Tigerstrom et al., *supra* note 3, at e13; and Larre, *supra* note 7, at 12:8-11.

31 It is likely that families (single- or dual-parent) earning less than \$20,000 a year would not pay tax and therefore could not use the CFTC. Even in situations where the distribution of income was not evenly split, the person with the higher income could use up the rest of the lower earner's federal personal exemption. Single parents may claim a credit of close to \$10,000 for their first child, so this reasoning will generally hold true for them as well.

32 See von Tigerstrom et al., *supra* note 3, at e12-13; and Larre, *supra* note 7, at 12:8-11.

33 The Active Families Benefits Act, SS 2008, c. A-4.01 (www.canlii.org/en/sk/laws/stat/ss-2008-c-a-4.01/latest/ss-2008-c-a-4.01.html).

34 See von Tigerstrom et al., *supra* note 3, at e13.

ice rinks), more families might take advantage of the tax benefit. However, the cost to the government would presumably be significantly higher.

We believe that this study is unique in that it is the first to examine the CFTC using both federal tax data and survey-based behavioural data. The comprehensiveness of the LAD data and the relatively large sample sizes of both data sets ensure that the estimates produced are reliable and representative of the Canadian population. Our findings are relevant to provinces and territories that have implemented a similar tax credit or are considering doing so. The study may also be useful in assessing other proposals that use economic incentives for obesity prevention or for other public health purposes, by highlighting factors that may influence awareness of these incentives or barriers to their use.

That said, this study is not without limitations. While it would have been ideal to be able to link the federal tax data with the survey data, the LAD tax data were de-identified prior to analysis, thus precluding this possibility. The cross-sectional nature of the CFLRI survey data limits the conclusions that can be drawn, and the possibility of bias owing to inaccurate recall or social desirability in self-reported behavioural data cannot be overlooked. However, these limitations are mitigated by the relatively large sample sizes of both data sets and the objective nature of the tax data. While the LAD is a comprehensive database, there remains the possibility of some loss of CFTC data owing to complex family situations that are not accounted for or clearly identified in the LAD. For example, the fact that the prior relationship of separated or divorced parents is not identified in the LAD may have implications for tracking CFTC claims. There are, however, checks in place to ensure that the data are as complete and accurate as possible.³⁵ Finally, our analyses do not allow us to make any claims with respect to the effectiveness of the CFTC in increasing physical activity rates among children. Given the difficulty of collecting and tracking data on actual change in physical activity rates before the CFTC was introduced and subsequently, and of linking any change to the CFTC, direct measurement of the program's effectiveness remains very challenging. However, the data presented and analyzed here provide the clearest indication yet of the patterns of use and influence on decisions that are necessary prerequisites in determining effectiveness.

CONCLUSION

Ultimately, the public health impact of the CFTC (and any similar future tax measures) depends on the extent to which the program increases physical activity among children and youth. As with other credits and deductions, this may be difficult, if not impossible, to ascertain.³⁶ For example, it is not clear from the literature whether the tax deduction available for registered retirement savings plans increases total savings

35 These are discussed in the LAD documentation, *supra* note 13.

36 See von Tigerstrom et al., *supra* note 3, at e12.

by Canadians or simply replaces non-retirement savings with retirement savings.³⁷ The CFTC represents a significant investment of public funds, and while it may be politically popular, it could be improved by addressing some of the limitations outlined above. Given that these programs continue to spread—British Columbia has now adopted a provincial children’s fitness tax credit,³⁸ the Alberta government announced its intention to implement a provincial credit,³⁹ and in 2011 the federal government announced its intention to double the amount of the CFTC and to introduce a similar tax credit for adults (to be implemented in 2015)⁴⁰—it is becoming all the more important to critically evaluate the CFTC (along with provincial tax credits) and implement the changes necessary to overcome the limitations of this policy, and thereby maximize the return on this public investment.

37 Michael J. Daly, “The Role of Registered Retirement Savings Plans in a Life-Cycle Model” (1981) 14:3 *Canadian Journal of Economics* 409-21, in the Canadian context; and Joel Slemrod and Jon Bakija, *Taxing Ourselves: A Citizen’s Guide to the Debate over Taxes*, 4th ed. (Cambridge, MA: MIT Press, 2008), in the US context.

38 British Columbia Finance, Budget 2012—Tax Savings for BC Families, February 21, 2012 (www.bcbudget.gov.bc.ca/2012/backgrounders/2012_Backgrounder_2.pdf).

39 CBC News, “Tories Promise Child Fitness Tax Break,” April 7, 2012 (www.cbc.ca/news/canada/albertavotes2012/story/2012/04/07/albertavotes2012-redford-child-fitness-tax-break.html).

40 CBC News, “Harper Would Extend Fitness Tax Credit,” April 3, 2011 (www.cbc.ca/news/politics/canadavotes2011/story/2011/04/03/cv-election-harper-ottawa.html#).