TITLE: Individual and Area Level Socioeconomic Inequalities in Diabetes in Saskatchewan between 2007 and 2013: A cross-sectional analysis.

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Abstract

Background: Improving our understanding of social inequalities may improve prevention and treatment efforts for diabetes. Our objective is to examine the association between individual and area level socioeconomic measures and physician diagnosed diabetes in Saskatchewan over time.

Methods: In this cross sectional study we link health administrative data with individual level socioeconomic data from the Canadian Community Health Survey and area level data from the 2006 Canadian Census. We use General Linear Mixed Models regression to analyze the effect of each, controlling for geographic and demographic measures.

Results: Area level deprivation is associated with medically diagnosed type 2 diabetes mellitus after adjusting for individual level factors: age, sex, household income and education. Individuals residing in areas ranked in the least deprived quintile (Q1) have a lower likelihood of diabetes compared to those in the most deprived quintile (Q5) (OR = 0.40, 95% CI = 0.18 to 0.88). However, this disparity is found to only exist in urban areas. This may reflect smaller health inequalities in rural areas, greater socioeconomic heterogeneity, and/or larger geographic units.

Interpretation: Individual and area level socioeconomic factors are associated with the likelihood of medically diagnosed diabetes, however, the strength of this association varies between urban and rural communities. Acknowledgement of area level deprivation as a modifiable risk factor related to the prevalence of diabetes is important in the development of effective interventions in urban, but not rural, areas.

Studies examining the association between socioeconomic deprivation and diabetes have shown that inequalities exist at the individual and area levels.[1-3] A systematic review and meta-analysis showed that low income individuals had a relative risk of diabetes that was 1.4 times (95% CI: 1.04-1.88) greater than high income individuals.[1] Studies in Canada have shown associations between area level deprivation and diabetes.[2] This work has led arguments that addressing geographic variation in health services factors and socioeconomic deprivation are essential for population health improvements.[3,4]

One challenge researchers confront in studying socioeconomic variation in health research is variation in geographic units between urban and rural areas. Past research has demonstrated that area level socioeconomic deprivation measures may be biased in rural areas because of the large land area and heterogeneity of socioeconomic characteristics compared to the smaller urban land area of equal population size.[5,6] At the individual level, a deprivation index may not be appropriate for differentiating between urban and rural areas, and a single item measure, such as income may be more appropriate.[6]

Guided by the World Health Organization Urban HEART (Health Equity Assessment and Response Tool) [7] we have developed our local indicators including area level deprivation and individual level income and education. We examine the association between area level socioeconomic deprivation and individual level income and education, and medically diagnosed diabetes in Saskatchewan between 2007 and 2012. We hypothesize that both area level socioeconomic deprivation and individual income and education will be associated with diabetes over time but that this effect will be modified by urban and rural contexts.

Methods

This cross-sectional study examined individual medically diagnosed prevalent cases of diabetes in Saskatchewan using health administrative data linked to individual level socioeconomic (SES) from the

Canadian Community Health Survey and linked again with area level SES information derived from the 2006 Canadian Census (see Figure 1). These linkages were required because individual socioeconomic data are not available in health administrative data. Health administrative data does contain patient postal code, allowing us to link administrative data to area level census geographies.

This linkage was carried out using a unique identifier that is assigned by the Government of Saskatchewan to all those eligible for health services. These individuals were linked to Dissemination Areas using Statistics Canada's Postal Code Conversion File[8] to convert the postal codes assigned to the individual records to Dissemination Area level variables derived from the 2006 Census (n=2,431).[9] Health administrative, Canadian Community Health Survey, and Postal Code Conversion File datasets are reliable, valid, and commonly used datasets for examining social inequities in health.

Diabetes

Our analysis is based on the yearly period prevalence of diabetes. All cases of diabetes in those age > 1 in a given year are included in the analysis. We define a prevalent case of diabetes in a given year as a person with one or more hospital discharge records with a diagnosis of diabetes in any diagnostic field of ICD-10-CA: E10, E11, E12 or E14 and/or two or more physician service claims within a 730 day (2 year) period with a diabetes diagnosis of ICD-9: 250.[10] We remove cases of gestational diabetes. Multiple hospital or physician visits on the same day are counted only once. We removed transfers of the same patient between hospitals to avoid double counting.

Area Level SES

The area level unit of analysis is the dissemination area, which consists of 400-700 persons and is the smallest geography available. Area level SES was operationalized using the Dissemination Area level deprivation index developed by Pampalon and colleagues obtained from the *Institue National De Santé*

Publique.[11] This index is made up of two dimensions: material and social deprivation. The material deprivation dimension, which contains the proportion of people age 15 years and older without a high school diploma, the employment/population ratio of people aged 15 years and older, and the average income of people ages 15 years and older. The social deprivation dimension contains the proportion of individuals aged 15 years and older living alone, the proportion of individuals aged 15 years and older who are separated, divorced or widowed, and the proportion of single-parent families. We combine material and social deprivation scores to create quintiles of total deprivation for each Dissemination Area in Saskatchewan.[16]

Individual Level SES

We control for education and household income. Education is operationalized as the highest level of education achieved (Canadian Community Health Survey derived variable EDUDR04) and is categorized as less than high school education, completed high school, or completed or some post-secondary education. Income is measured as total household income from all sources (Canadian Community Health Survey derived variable INCDHH). Income is separated into categories of $0-$19,999, $20,000-$49,999, $50,000-$79,000, or >$80,000. We chose these categorizations to represent the education and income distribution while ensuring sufficient sample size in each category.

Covariates

We also include as covariates age, gender and whether individuals live in urban or rural areas. Age is categorized as <35, 35-44, 45-59, 60-79, or >80 years old and gender is self-reported in the Canadian Community Health Survey. Urban areas are defined as Dissemination Areas having a population concentration of 1,000 or more and a population density of 400 or more per square kilometer, the same definition used in the Canadian Community Health Survey. We also included dummy variables for years 2007 through 2011 to control for periodic variation.

Analysis

We use multilevel logistic regression to estimate the prevalence of diabetes (Yes/No), controlling for random effects at the Dissemination Area level. We fit models for the population of Saskatchewan as a whole, and separate models for urban and rural areas. Multilevel models included bivariate screening for significance and a step up approach for multivariable model building. First, we fit null models. Second, we included area level factors. Third, we included all individual socioeconomic variables, covariates, and a categorical variable representing each year. All our models are fitted using SAS GLMM using maximum likelihood subject specific pseudo-likelihood estimation (MSPL). All reported results are weighted using the Canadian Community Health Survey weight variable (SAS analysis code available online: https://github.com/walkabilly/diabetes_inequality).

Ethics Approval

Ethical approval was obtained for the University of Saskatchewan Biomedical Research Ethics Board (Bio# 12-268).

Results

There were 6,331,934 people covered by Saskatchewan Health between 2007 and 2012. On average, 1,055,322 people per year. We identified 98,121 prevalent cases of diabetes between 2007 and 2012. Across all years, the Canadian Community Health Survey data included 41,468 respondents who provided permission to link. We linked 15,720 individuals Saskatchewan Health data, including 1,516 prevalent cases of diabetes across all years. These individuals were linked to 1413 Dissemination Areass. Missing Dissemination Areas (1,018/2,431) were the result of our choice to use a single link indicator, meaning that postal codes that overlap multiple Dissemination Areas were assigned to only

one. A small percentage of Dissemination Areas did not have Canadian Community Health Survey derived deprivation data, others did not have diabetes cases.

Table 1 reports weighted and unweighted descriptive statistics for the variables used in our analysis. The following summarizes our weighted results. Across all years, the number of people with prevalent diabetes is 7.6%. The youngest age group, less than 35 year old, represents 38.5% of the population and the oldest 4.5%. Males and females represent 49.4% and 50.6% of the population, respectively. The percentage of people with household income less than $20,000 is 21.4% and 54.1% have a household income greater than $50,000 per year. The percentage of those with less than high school education is 24.2%, while 48.3% have some postsecondary. 22.3% of the population reside in rural areas.

The Association Between Individual and Area SES, and Diabetes

Table 2 reports the results of the three logistic regression models we fit for Saskatchewan as a whole, for urban areas only, and for rural areas only. Level 2 denotes Dissemination Area level effects variables, and level 1 individual level effects.

In the Saskatchewan model, compared to rural areas, urban areas had a lesser likelihood of diabetes (OR = 0.46, 95% CI = 0.27 to 0.79). Compared to the most deprived area level quintiles, the least deprived area level quintiles a lesser likelihood diabetes (OR = 0.40, 95% CI = 0.18 to 0.88). There are no significant differences between quintiles 2, 3, and 4 and quintile 5, the most deprived quintile. Individual level SES variables were associated with diabetes across the range of their distributions. Those earning incomes of $20,000 to $49,999 (OR = 0.64, 95% CI = 0.63 to 0.65), $50,000 to $79,000 (OR = 0.65, 95% CI = 0.64 to 0.67), and greater than $80,000 (OR = 0.64, 95% CI = 0.63 to 0.66) had a lower likelihood of diabetes compared to those earning less than $20,000. Those with a less than a high school education (OR = 1.51, 95% CI = 1.49 to 1.54) and a high school education (OR = 1.08,

95% CI = 1.06 to 1.10) were more likely to have been diagnosed with diabetes compared to those with some postsecondary education.

Urban and Rural Associations

In stratified urban and rural models, urban areas showed the same relationships between SES and period prevalence of diabetes as for Saskatchewan as a whole with those residing in the least deprived quintile (Q1) having a lesser likelihood of diabetes compared to those residing in the most deprived quintile (Q5) (OR = 0.32, 95% CI = 0.13 to 0.78). Area level deprivation was not associated with the likelihood of diabetes in rural areas.

Individual level SES variables are hypothesized to be associated with diabetes in both urban and rural settings. In urban (OR = 0.72, 95% CI = 0.70 to 0.73) and rural (OR = 0.43, 95% CI = 0.41 to 0.45) areas, those earning more than $80,000 per year where less likely to be diagnosed with diabetes than those earning less than $20,000 per year. There is an income gradient for diabetes in both urban and rural areas, however, the gradient is steeper in rural areas.

In both urban (OR = 1.50, 95% CI = 1.47 to 1.53) and rural (OR = 1.43, 95% CI = 1.39 to 1.48) areas, those with less than a high school education were more likely to be diagnosed with diabetes. However, unlike in the province as a whole, those with a high school education in rural settings (OR = 0.87, 95% CI = 0.84 to 0.91) were less likely to have been diagnosed with diabetes compared to those with some postsecondary education.

Interpretation

Summary of Findings

The objective of this study is to examine associations between individual and area level SES deprivation and medically diagnosed diabetes in Saskatchewan between 2007 and 2012. As a secondary objective, analyses were stratified by urban and rural to examine potential differences in the relationship by region. Our results showed that area level deprivation is associated with medically diagnosed diabetes mellitus after adjusting for individual level factors in Saskatchewan overall and in urban areas. We did not detect area level inequalities in diabetes in rural areas.

Explanation of Findings

The results were consistent with past research showing that area level SES deprivation is associated with a greater likelihood of diabetes even when individual level SES characteristics are controlled. The estimated association between area level SES deprivation and diabetes is higher than reported in previous studies. Our results show a 2.5 times greater likelihood of diabetes in socioeconomically disadvantaged areas. Previous research has estimated effects of 1.8 and 1.4 times greater likelihood of diabetes, respectively.[12,13] Area level material deprivation is also predictive of the future risk of diabetes for females (2.4 times greater risk) and males (1.6 times greater risk).[14]

At the individual level, and in Saskatchewan as a whole, our results show that individual level SES deprivation is associated with greater period prevalence of diabetes. Income categories greater than $20,000 have less likelihood of diabetes compared to the less than $20,000 household income groups and a less than high school education and high school education levels are found to be associated with a greater likelihood of diabetes compared to some post-secondary school.

In the model estimated over just urban areas, although all wealthier income groups fare better than the least well off group, their gradient is the opposite of what one would be expected. This may be related

changes in household income and chronic disease over time associated changes in the population composition due to immigration that took place in urban Saskatchewan over the study period.[15,16]

In rural areas the likelihood of diabetes was less in the high school educated group than in the post-secondary education group. In Saskatchewan, less educated rural residents may work physically demanding jobs in farming communities, which could explain the lower likelihood of diabetes.[17]

Our results suggest that caution should be exercised when interpreting results of studies about health inequalities in rural settings. Area based measures of deprivation are less similar to individual level measures of deprivation in rural areas.[18] In rural settings, area units encompass considerably larger geographic areas and greater heterogeneity in socioeconomic status than seen in geographically smaller urban areas of equal population size.[19] Multifactor deprivation indices may have too many factors to be effective in rural settings and single item area based measures may be preferable in rural settings.[5,20] Overall, and consistent with recent assessment of the practical utility of diabetes intervention research, more evidence is needed to inform and tailor preventive measures based on individual and area level SES factors.[21]

Limitations

Our work has a number or limitations related to the use of health administrative, census geography data, and representation of Indigenous and First Nations populations. The use of health administrative data for research is common and there is limited risk of bias if proper procedures are used.[22,23] In Saskatchewan, approximately 33% of general practitioners, and 38% of specialists shadow bill (ie, submit billings despite being salaried and not being paid directly from billings). Physicians typically do not shadow bill 100% of their work but there is no audit done to access its prevalence or accuracy in

Saskatchewan.[24] Given the long period of study it is also possible that physician turnover and changes in diagnostic practices over time have affected results.[25]

We used deprivation data from the 2006 census. Our method assumes no change in area level deprivation between 2007 and 2015 in Saskatchewan, leading to potential misclassification. Comparisons of area level deprivation between 2001 and 2006 show that 45% of Dissemination Area did not change deprivation quintiles and 37% of changes were within 1 deprivation quintile. There is also potential misclassification of postal codes to dissemination areas.

Our analysis did not include potentially relevant covariates including demographic changes or migration patterns. Our analyses do not include on reserve First Nations communities. Both the Canadian Community Health Survey and Census based deprivation index do not include on reserve First Nations communities, meaning these groups are excluded from the analysis. Over half of the Indigenous population of Saskatchewan lives off reserve areas, however, we cannot identify this population because there is no measure of Indigenous or First Nations status in the Saskatchewan Health Administrative data.[26]

Conclusion

This study examines individual and area level SES inequalities in diabetes in Saskatchewan from 2007 to 2012. Results show that area level socioeconomic deprivation is associated with a greater likelihood of diabetes, when controlling for individual level income and education. Our results further suggest that this relationship is mediated by whether people reside in urban or rural areas and that area level socioeconomic factors should especially be considered in strategies for diabetes prevention in urban settings.

Targeted measures designed to improve health equity are a key instrument for improving population health. Our results suggest that the most effective approach to doing so is likely to vary between urban and rural settings. Place based interventions are more likely to work in cities where populations are densely distributed but in rural areas targeting should be guided by individual characteristics.

Contributorship Statement

DF, CN, and SL conceptualized the research question and analysis. DF, JN, SL, LT, HR, and TB conducted data analysis. All authors commented on a reviewed draft versions of the manuscript. All authors reviewed the final version of the manuscript prior to submission.

References

1. Agardh E, Allebeck P, Hallqvist J, Moradi T, Sidorchuk A. Type 2 diabetes incidence and socio-economic position: a systematic review and meta-analysis. *International Journal of Epidemiology*. 2011;40(3):804-818. doi:10.1093/ije/dyr029.

2. Lemstra M, Neudorf C, Opondo J. Health Disparity by Neighbourhood Income. *Canadian Journal of Public Health*. 2006;97(6):435-439.

3. Gabb G, Arnolda L. Geographic location as a modifiable cardiac risk factor. *Canadian Medical Association Journal*. 2017;189(13):E482-E483. doi:10.1503/cmaj.170116.

4. Cox M, Boyle PJ, Davey PG, Feng Z, Morris AD. Locality deprivation and Type 2 diabetes incidence: A local test of relative inequalities. *Am J Public Health*. 2007;65(9):1953-1964. doi:10.1016/j.socscimed.2007.05.043.

5. Terashima M, Rainham DGC, Levy AR. A small-area analysis of inequalities in chronic disease prevalence across urban and non-urban communities in the Province of Nova Scotia, Canada, 2007–2011. *BMJ Open*. 2014;4(5):e004459. doi:10.1136/bmjopen-2013-004459.

6. Pampalon R, Martinez J, Hamel D. Does living in rural areas make a difference for health in Québec? *Health & Place*. 2006;12(4):421-435. doi:10.1016/j.healthplace.2005.04.002.

7. World Health Organization. *Urban HEART: Urban Health Equity Assessment and Response Tool: User Manual.*; 2010.

8. Canada Poste. Postal Code Conversion File, Reference Guide. https://www.canadapost.ca/cpc/assets/cpc/uploads/files/marketing/2017-postal-code-conversion-file-reference-guide-en.pdf. Accessed August 2, 2019.

9. Statistics Canada. 2006 Candian Census of the Population. https://www12.statcan.gc.ca/datasets/Index-eng.cfm. Accessed October 31, 2018.

10. Public Health Agency of Canada. *Report From the Canadian Chronic Disease Surveillance System: Hypertension in Canada*. 2010.

11. Pampalon R, Hamel D, Gamache P. A deprivation index for healthy planning. *Chronic Diseases in Canada*. 2011;29(4):178-191.

12. Rachele JN, Giles-Corti B, Turrell G. Neighbourhood disadvantage and self-reported type 2 diabetes, heart disease and comorbidity: a cross-sectional multilevel study. *Annals of Epidemiology*. 2016;26(2):146-150. doi:10.1016/j.annepidem.2015.11.008.

13. Grundmann N, Mielck A, Siegel M, Maier W. Area deprivation and the prevalence of type 2 diabetes and obesity: analysis at the municipality level in Germany. *BMC Public Health*. 2014;14(1):1953. doi:10.1186/1471-2458-14-1264.

14. Rivera LA, Lebenbaum M, Rosella LC. The influence of socioeconomic status on future risk for developing Type 2 diabetes in the Canadian population between 2011 and 2022:

differential associations by sex. *Int J Equity Health*. 2015;14(1):101. doi:10.1186/s12939-015-0245-0.

15. Chiu M, Austin PC, Manuel DG, Tu JV. Comparison of cardiovascular risk profiles among ethnic groups using population health surveys between 1996 and 2007. *CMAJ*. 2010;182(8):E301-E310. doi:10.1503/cmaj.091676.

16. Quan H, Fong A, De Coster C, et al. Variation in health services utilization among ethnic populations. *Canadian Medical Association Journal*. 2006;174(6):787-791. doi:10.1503/cmaj.050674.

17. Dyck R, Karunanayake C, Pahwa P, et al. Prevalence, risk factors and co-morbidities of diabetes among adults in rural Saskatchewan: the influence of farm residence and agriculture-related exposures. *BMC Public Health*. 2013;13(1):666. doi:10.1186/1471-2458-13-7.

18. Barnett S, Roderick P, Martin D, Diamond I. A multilevel analysis of the effects of rurality and social deprivation on premature limiting long term illness. *Journal of Epidemiology & Community Health*. 2001;55(1):44-51. doi:10.1136/jech.55.1.44.

19. Schuurman N, Bell N, Dunn JR, Oliver L. Deprivation Indices, Population Health and Geography: An Evaluation of the Spatial Effectiveness of Indices at Multiple Scales. *Journal of Urban Health : Bulletin of the New York Academy of Medicine*. 2007;84(4):591-603. doi:10.1007/s11524-007-9193-3.

20. Mustard CA, Derksen S, Berthelot J-M, Wolfson M. Assessing ecologic proxies for household income: a comparison of household and neighbourhood level income measures in the study of population health status. *Health & Place*. 1999;5(2):157-171. doi:10.1016/S1353-8292(99)00008-8.

21. Cefalu WT, Buse JB, Tuomilehto J, et al. Update and Next Steps for Real-World Translation of Interventions for Type 2 Diabetes Prevention: Reflections From a Diabetes Care Editors' Expert Forum. *Dia Care*. 2016;39(7):1186-1201. doi:10.2337/dc16-0873.

22. van Walraven C, Austin P. Administrative database research has unique characteristics that can risk biased results. *Journal of Clinical Epidemiology*. 2012;65(2):126-131. doi:10.1016/j.jclinepi.2011.08.002.

23. A Virnig B, McBean M. Administrative Data for Public Health Surveillance and Planing. *http://dxdoiorg/101146/annurevpublhealth221213*. 2003;22(1):213-230. doi:10.1146/annurev.publhealth.22.1.213.

24. Canadian Institutes for Health Information. Data Quality Documentation, Discharge Abstract Database—Current-Year Information, 2012–2013. https://www.cihi.ca/sites/default/files/dad_data_quality_12_13_en_0.pdf. Accessed August 2, 2019.

25. Song Y, Skinner J, Bynum J, Sutherland J, Wennberg JE, Fisher ES. Regional Variations in Diagnostic Practices. *N Engl J Med*. 2010;363(1):45-53. doi:10.1056/NEJMsa0910881.

26. Statistics Canada. Focus on Geography Series, 2016 Census. https://www12.statcan.gc.ca/census-recensement/2016/as-sa/fogs-spg/Facts-pr-eng.cfm?LANG=Eng&GK=PR&GC=47&TOPIC=9.

Figure 1. Flow chart of diabetes case selection from health administrative data, Canadian Community Health Survey link file data, and Census data, Saskatchewan, 2007-2012.

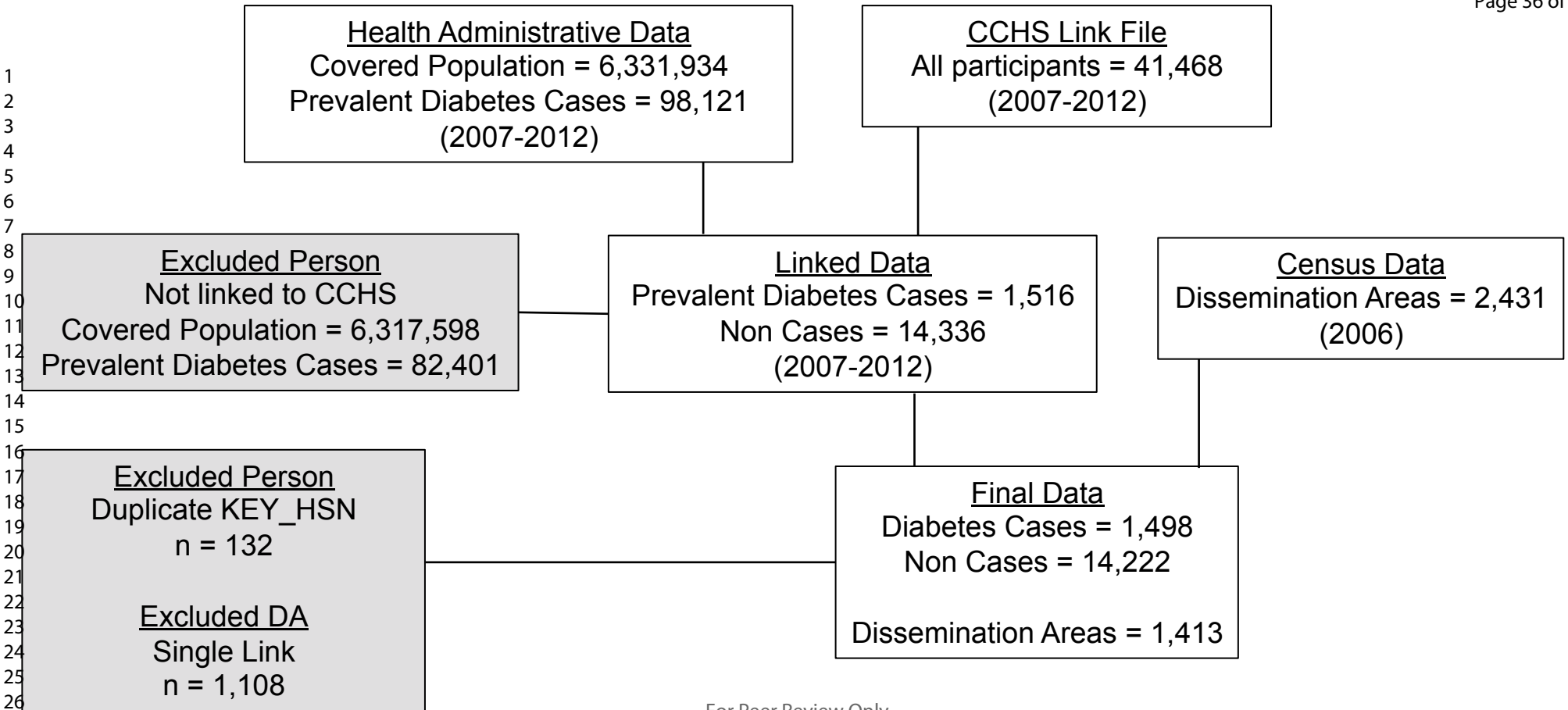

Table 1. Descriptive statistics for participants from health administrative, Canadian Community Health Survey, and Census data, Saskatchewan, 2007-2013.

	Unweighted Sample Size	Weighted Percent
Diabetes		
Yes	1498	7.6%
No	14222	92.4%
Level 1		
Age		
<35	4955	38.5%
35-44	1831	13.8%
45-59	3500	24.8%
60-79	4118	18.4%
>80	1316	4.5%
Gender		
Male	7117	49.4%
Female	8603	50.6%
Income		
$0-$19,999	3273	21.4%
$20,000-$49,999	2958	24.6%
$50,000-$79,999	2694	24.7%
>$80,000	2662	29.4%
Missing	4133	
Education		
Less than High School	4505	24.2%
High School	3932	27.5%
Postsecondary	7200	48.3%
Level 2		
Deprivation		
Q1 Least Deprived	2315	22.9%
Q2	2586	21.3%
Q3	2613	19.8%
Q4	2331	17.2%
Q5 Most Deprived	2628	18.9%
Geography		
Urban	10485	77.7%
Rural	5235	22.3%

Table 2. Results from multilevel logistic regression analysis of prevalent diabetes cases in Saskatchewan, 2007-2012.

	Saskatchewan[a] Adjusted OR, 95% CI	Urban[b] Adjusted OR, 95% CI	Rural[c] Adjusted OR, 95% CI
Level 2			
Deprivation			
Q1 Least Deprived	**0.40 (0.18 to 0.88)**	**0.32 (0.13 to 0.78)**	0.84 (0.13 to 5.43)
Q2	0.59 (0.29 to 1.22)	0.53 (0.23 to 1.25)	0.80 (0.16 to 4.01)
Q3	0.74 (0.36 to 1.51)	0.70 (0.31 to 1.63)	1.02 (0.20 to 5.14)
Q4	0.80 (0.38 to 1.68)	0.75 (0.32 to 1.74)	1.11 (0.20 to 6.23)
Q5 Most Deprived	1	1	1
Geography			
Urban	**0.46 (0.27 to 0.79)**		
Rural	1		
Level 1			
Income			
$0-$19,999	1	1	1
$20,000-$49,999	**0.64 (0.63 to 0.65)**	**0.55 (0.54 to 0.57)**	**0.91 (0.88 to 0.94)**
>$50,000-$79,000	**0.65 (0.64 to 0.67)**	**0.62 (0.60 to 0.63)**	**0.68 (0.66 to 0.71)**
>$80,000	**0.64 (0.63 to 0.66)**	**0.72 (0.70 to 0.73)**	**0.43 (0.41 to 0.45)**
Education			
Less than High School	**1.51 (1.49 to 1.54)**	**1.50 (1.47 to 1.53)**	**1.43 (1.39 to 1.48)**
High School	**1.08 (1.06 to 1.10)**	**1.16 (1.14 to 1.19)**	**0.87 (0.84 to 0.91)**
Postsecondary	1	1	1
-2 Log Pseudo-Likelihood	1235864	1626750	497563

Notes. [a] Model controlling for year, age, and gender. [b,c] Models controlling for year, age, and gender.