The Effect of Neighbourhood Walkability and Neighbourhood SES on Commuting Behaviour

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BACKGROUND

- Regular participation in active transportation, including walking and cycling, have positive health benefits {REF}.
- Regular participation in passive modes of transportation such as driving in a motor vehicle can have negative health consequences including increasing the risk of overweight and obesity {REF}
- Despite the possible health as well as environmental benefits, too few Canadians participate in active transportation {REF}
- The built environment is a correlate of active transportation {REF} however, it is not known whether socioeconomic status moderates this relationship.

AIM

Investigate the interrelationships between neighbourhood-level built environment, socioeconomic status, and commuting mode, within the Calgary metropolitan area.

METHOD

•Ecological study design using existing data including Walkscore®, Statistics Canada 2006 Census, and municipal spatial databases.

•The Walkscore® index was derived for all Calgary Administrative Boundaries (CAB). Pathway and sidewalk length, distance to city centre, number of bus stops were also estimated for each CAB.

•Socioeconomic status (SES) was estimated for all CABs based on an index including: % of 25-64 year olds with no high school diploma, certificate, or degree; % of single-parent families; % of rented private dwellings; % of divorced, separated, or widowed among those ≥15 years of age; % unemployed among those ≥25 years of age; gross median household income, and; average dwelling value.

RESULTS

•The mean (±standard deviation) walkability (i.e., walkscore) across neighbourhoods (n=179) was 57±16 (range: 12-97). The mean neighbourhood-level SES was 0.03±4.18 (range: X-X).

•An increase in SES was associated with an increase in car commuting and decrease in transit commuting.

•Neighbourhood-level SES was found to moderate the relationship between walkability Regression results suggest there are significant (p<.05) interactions between the built environment and SES (figures 1-6)

Figure 1: Walkability x SES interaction for commuting by transit

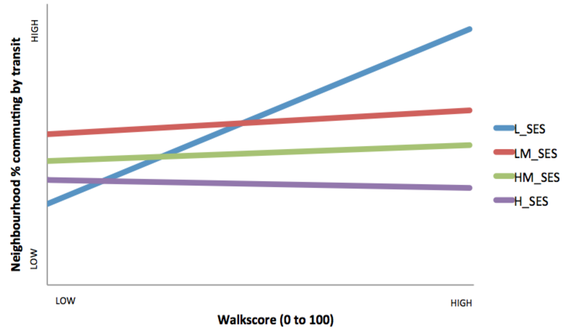

Figure 2: Pathway x SES interaction and commuting by transit

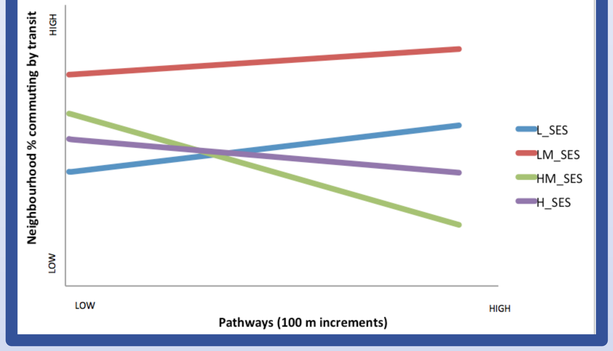

Figure 3: Bus stop x SES interaction transit commuting

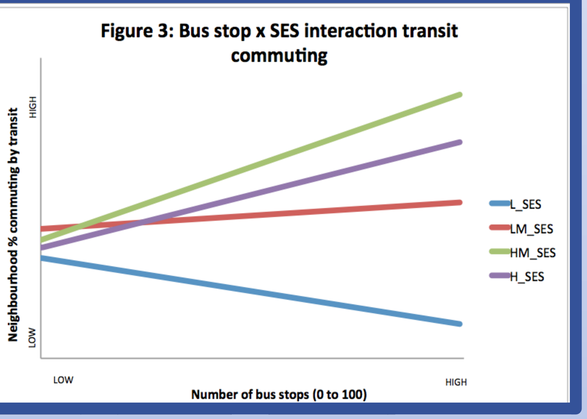

Figure 4: Pathway x SES interaction and commuting by walking

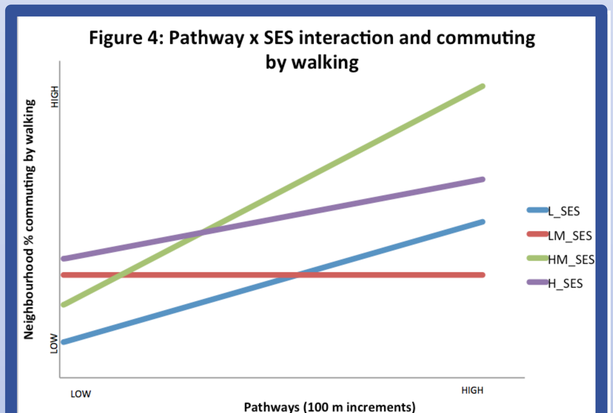

Figure 5: Pathway x SES interaction and commuting by cycling

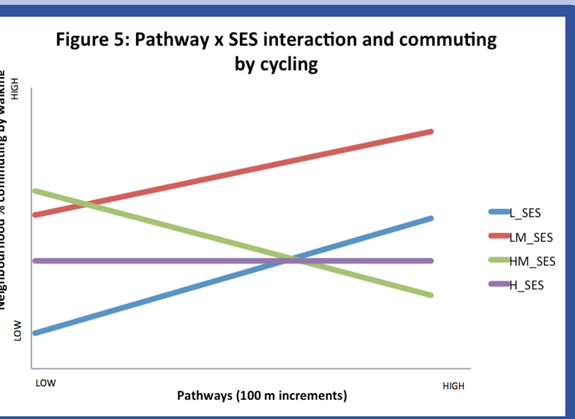

Figure 6: Distance to city centre x SES interaction and commuting by cycling

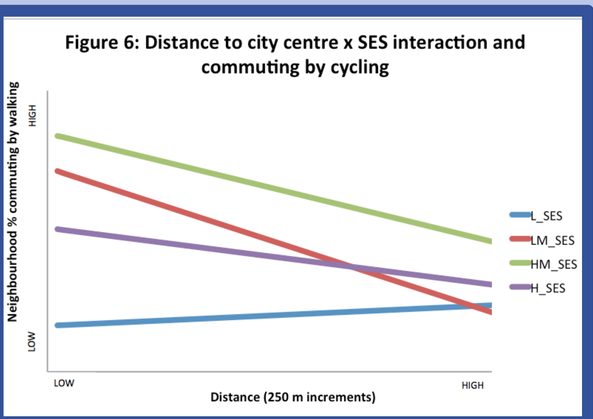

Table 1: One-way ANOVA neighbourhood walkability, socioeconomic status and commuting

	Walk Score (0-100)			
	L	LM	HM	H
Car*[bcdef]	82.0±5.9	79.1±7.8	73.6±9.6	59.7±14.6
Transit*[ce]	14.9±4.6	15.2±4.7	17.2±5.2	19.1±7.7
Walking*[bcef]	1.5±1.3	3.4±3.8	6.0±6.0	17.1±12.8
Cycling*[abcef]	0.7±0.8	1.6±1.9	2.2±2.1	3.1±2.0
	Socioeconomic Status			
	L	LM	HM	H
Car*[cdef]	70.4±12.9	67.0±14.2	75.4±11.0	81.9±9.1
Transit*[bcdef]	20.0±6.5	18.7±4.2	16.3±4.3	11.3±4.3
Walking*[de]	6.9±7.9	10.7±11.2	5.8±9.6	4.5±7.9
Cycling*[ade]	1.6±1.6	2.7±2.2	1.8±1.9	1.5±1.8

* $p < .05$ ANOVA;[a] L vs LM (p<.05);[b] L vs HM(p<.05);[c] L vs H (p<.05);[d] LM vs HM (p<.05);[e] LM vs H (p<.05);[f] HM vs H (p<.05)

CONCLUSION

- After adjusting for other factors, the built environment and SES have an association with commuting mode at the neighbourhood-level.
- The direction and magnitude of the relationship between the built environment and commuting however, may be moderated by neighbourhood-level SES.
- Multi-faceted population health interventions may be needed to increase participation in active transportation. Level of neighbourhood SES would need to be considered in the designed of these interventions.

REFERENCES

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ACKNOWLEDGEMENT

Jagdeep Virk is funded by the Alberta Innovates Health Solutions Summer Studentship. Alberta Walk Score Data was provided through a research collaboration with Dr. Jeffrey Johnson, Scientific Director of the Diabetes, Obesity and Nutrition Strategic Clinical Network. Gavin McCormack is supported by a Canadian Institutes for Health Research New Investigator Award