

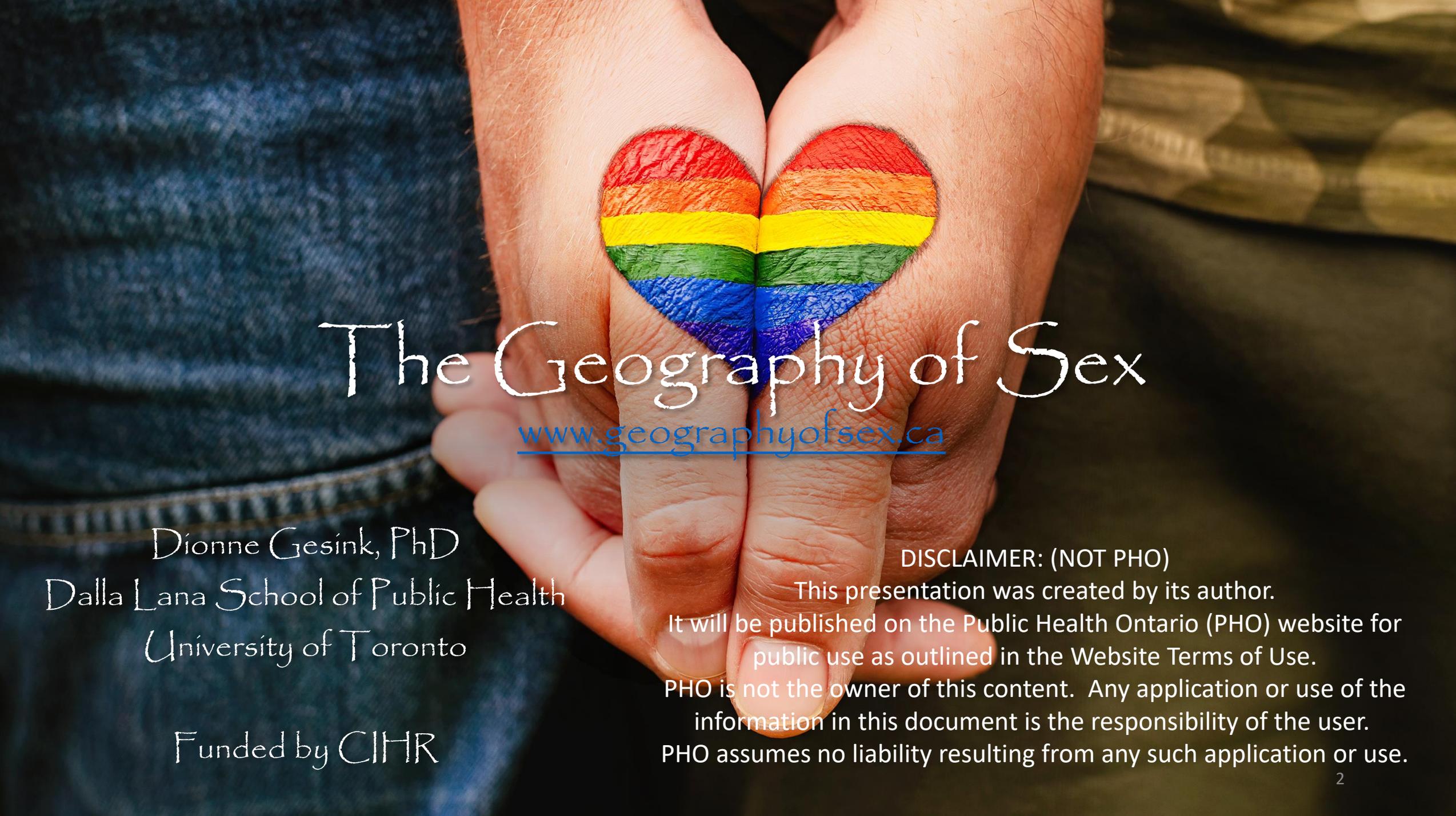
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<http://www.youtube.com/watch?v=G9gGIL1A-b0>

Please scroll down this file to view a copy of the slides from the session.

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A close-up photograph of two hands, palms facing each other, holding a heart shape. The heart is painted with the colors of the rainbow flag: red, orange, yellow, green, blue, and purple. The hands are positioned in the center of the frame, with the fingers slightly curled around the heart. The background is dark and out of focus, showing what appears to be a blue denim jacket on the left and a patterned fabric on the right.

The Geography of Sex

www.geographyofsex.ca

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University of Toronto

Funded by CIHR

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2SLGBTQ+ Training and Capacity Building Coordinator



Disclosures

Conflict of Interest

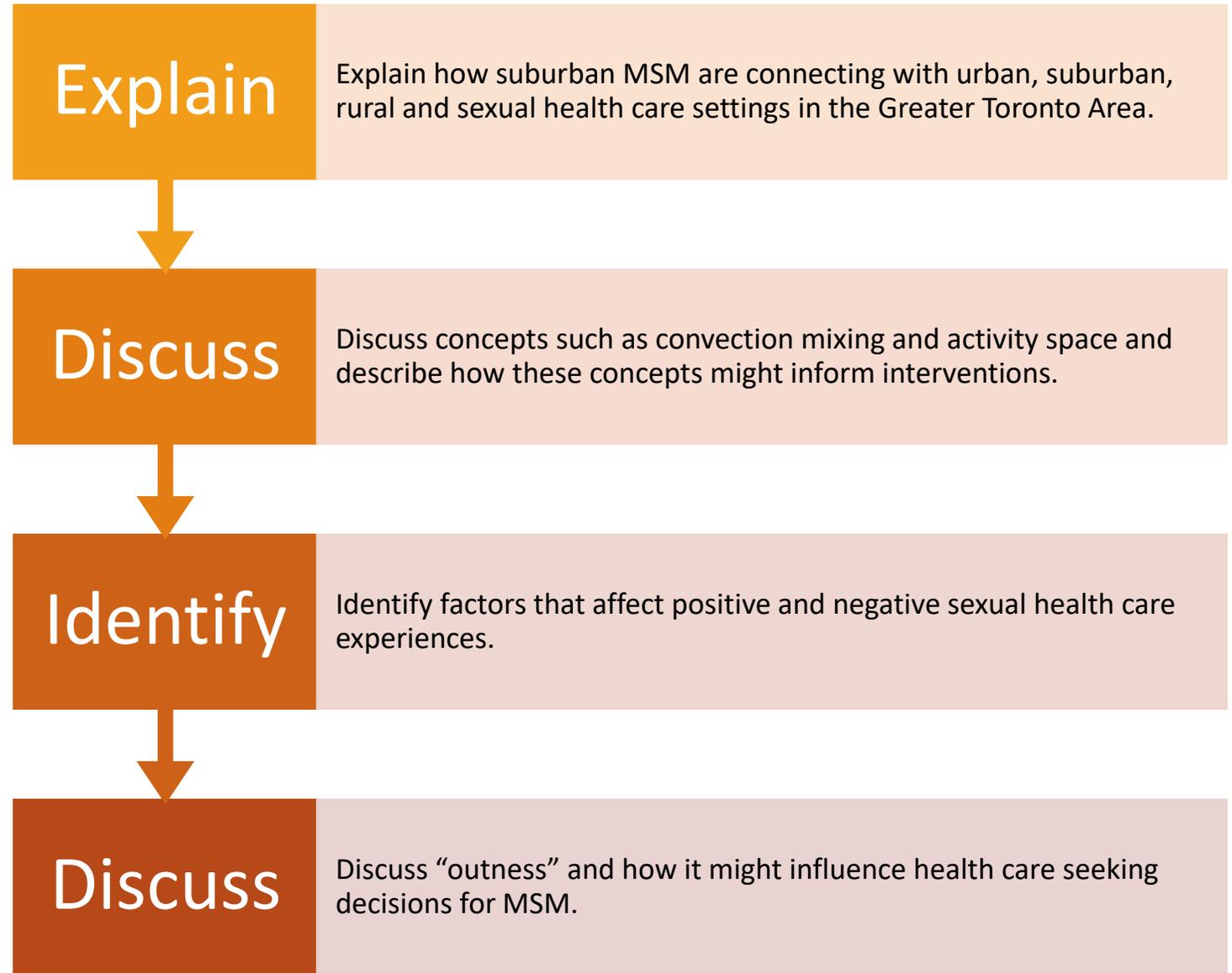
- Dionne Gesink: None
- Jillian Watkins: None
- Winson Wong: None

Funding

- Canadian Institutes of Health Research (CIHR Funds: 174889 and 169645)



Objectives



Flow of the Talk:

Background: Social Geography of STIs

The Geography of Sex, Urban Edition – Toronto

The Geography of Sex, Suburban Edition – Peel

Preliminary Recommendations

Discussion

Background:
Social
Geography
of Sexually
Transmitted
Infections
(STIs)



LAMPORN 05



Yorke JA, Hethcote HW, Nold A. Dynamics and control of the transmission of gonorrhea. *Sex Transm Dis.* 1978;5(2):51-56

Rothenberg RB. The geography of gonorrhea. Empirical demonstration of core group transmission. *Am J Epidemiol* 1983; 117: 688-694



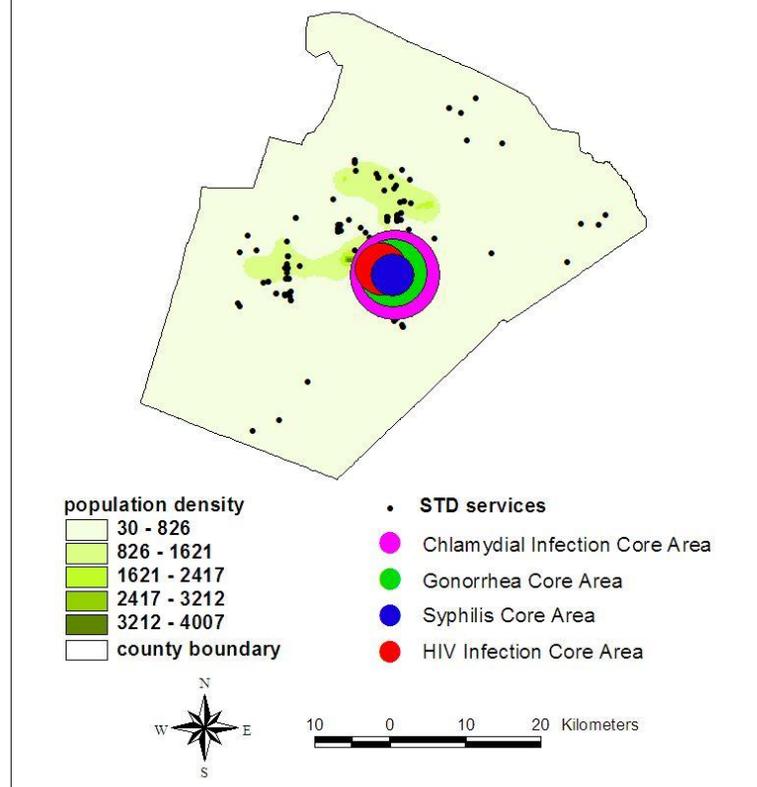


Partner selection is local phenomenon...

but the role of apps is unclear

- Zenilman JM, Elish N, Fresia A, et al. The geography of sexual partnerships in Baltimore: Applications of core theory dynamics using a geographic information system. *Sex Transm Dis* 1999; 26:75-81
- Gindi RM, Sifakis F, Sherman SG, et al. The geography of heterosexual partnerships in Baltimore City adults. *Sex Transm Dis* 2011;38:260Y266

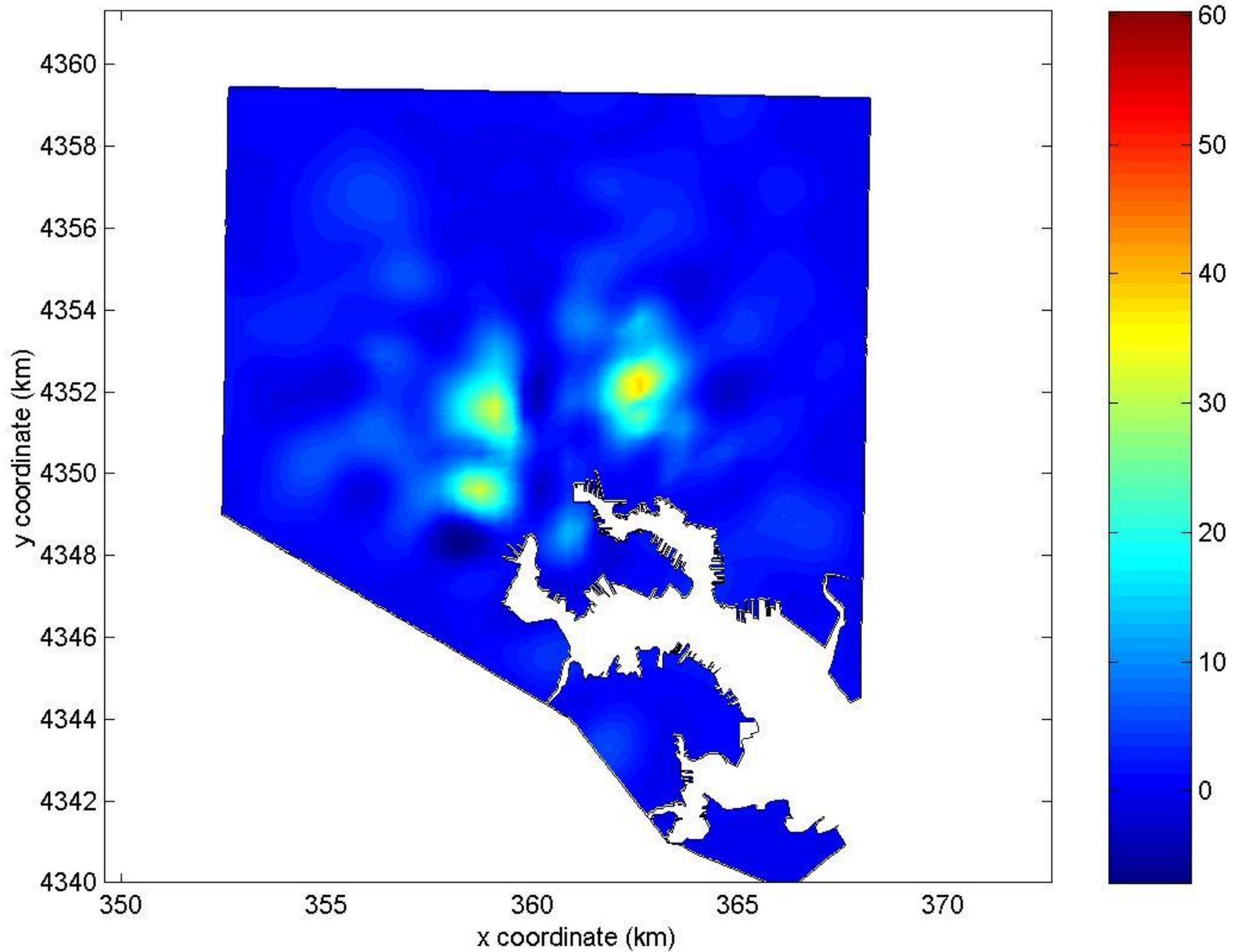
Location of STD Services Relative to Population and Core Areas



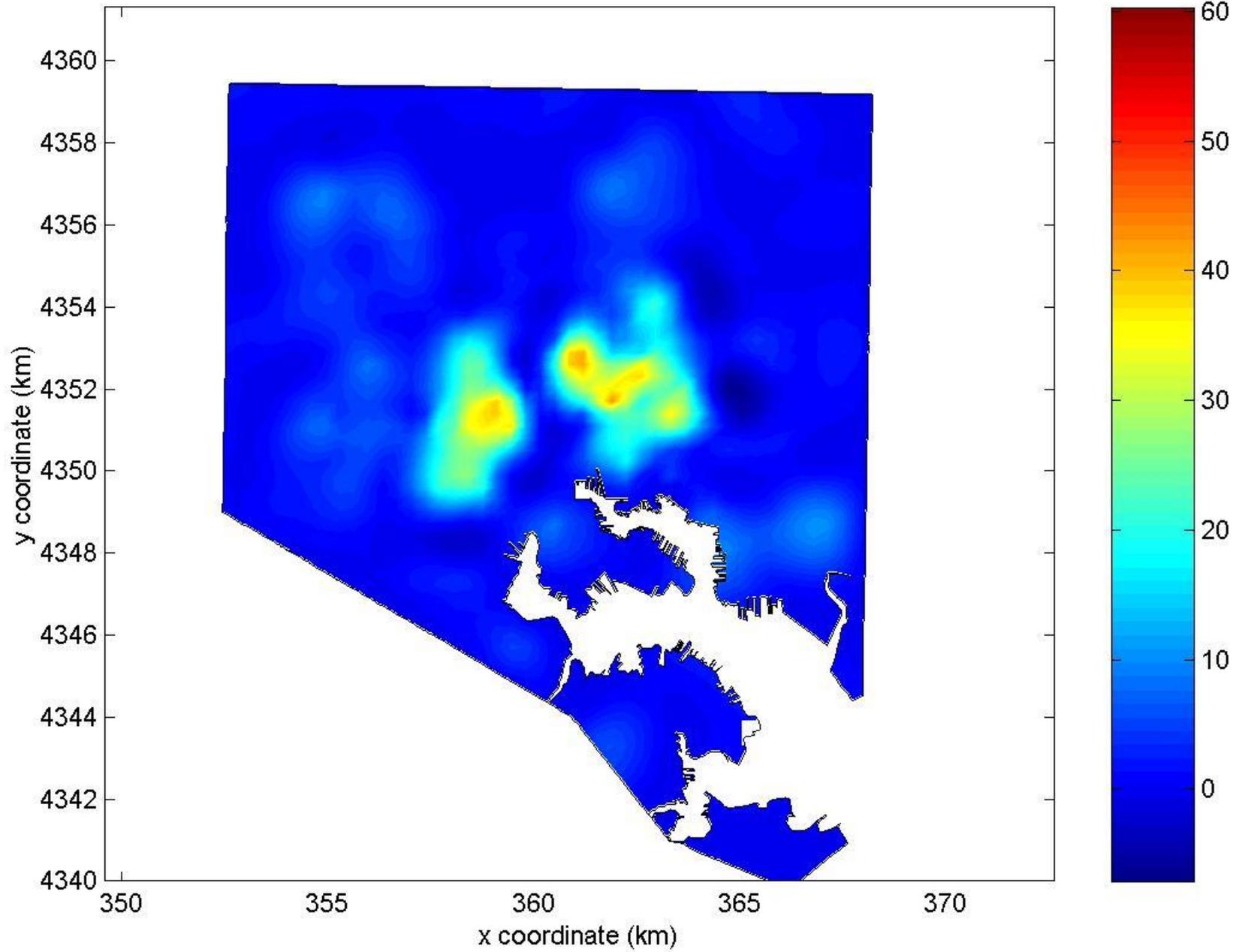
Partners move around to each other for sex



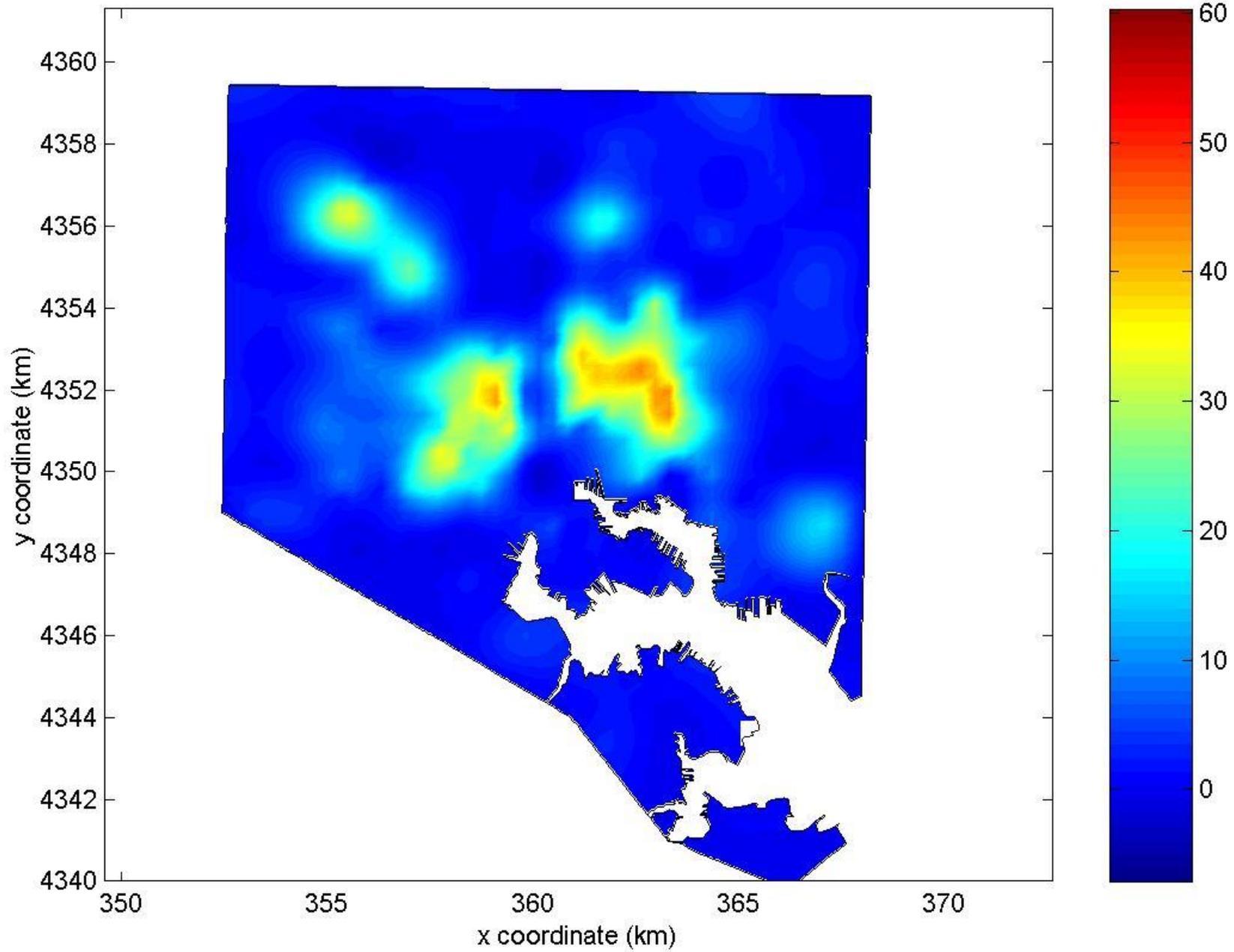
1994



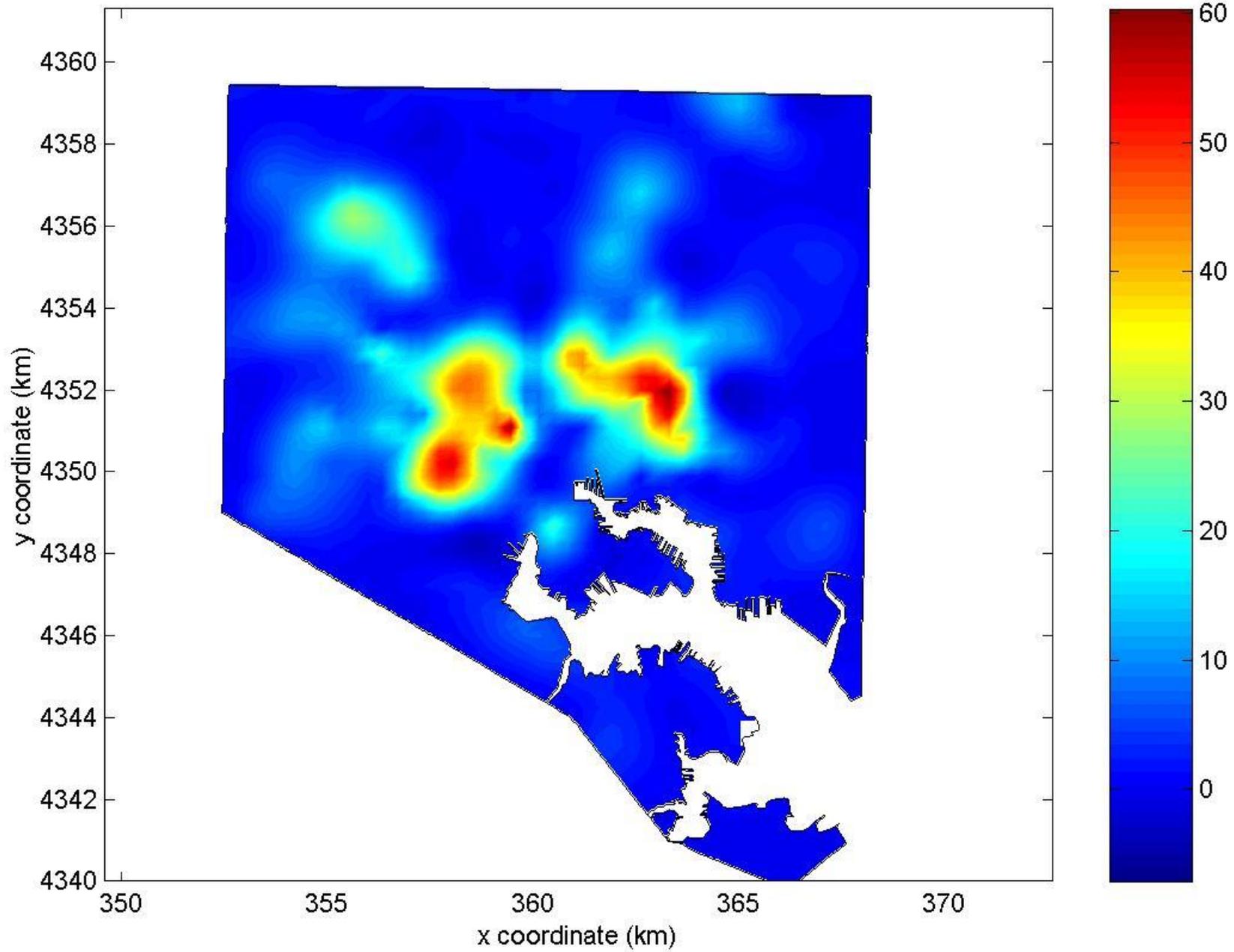
1995



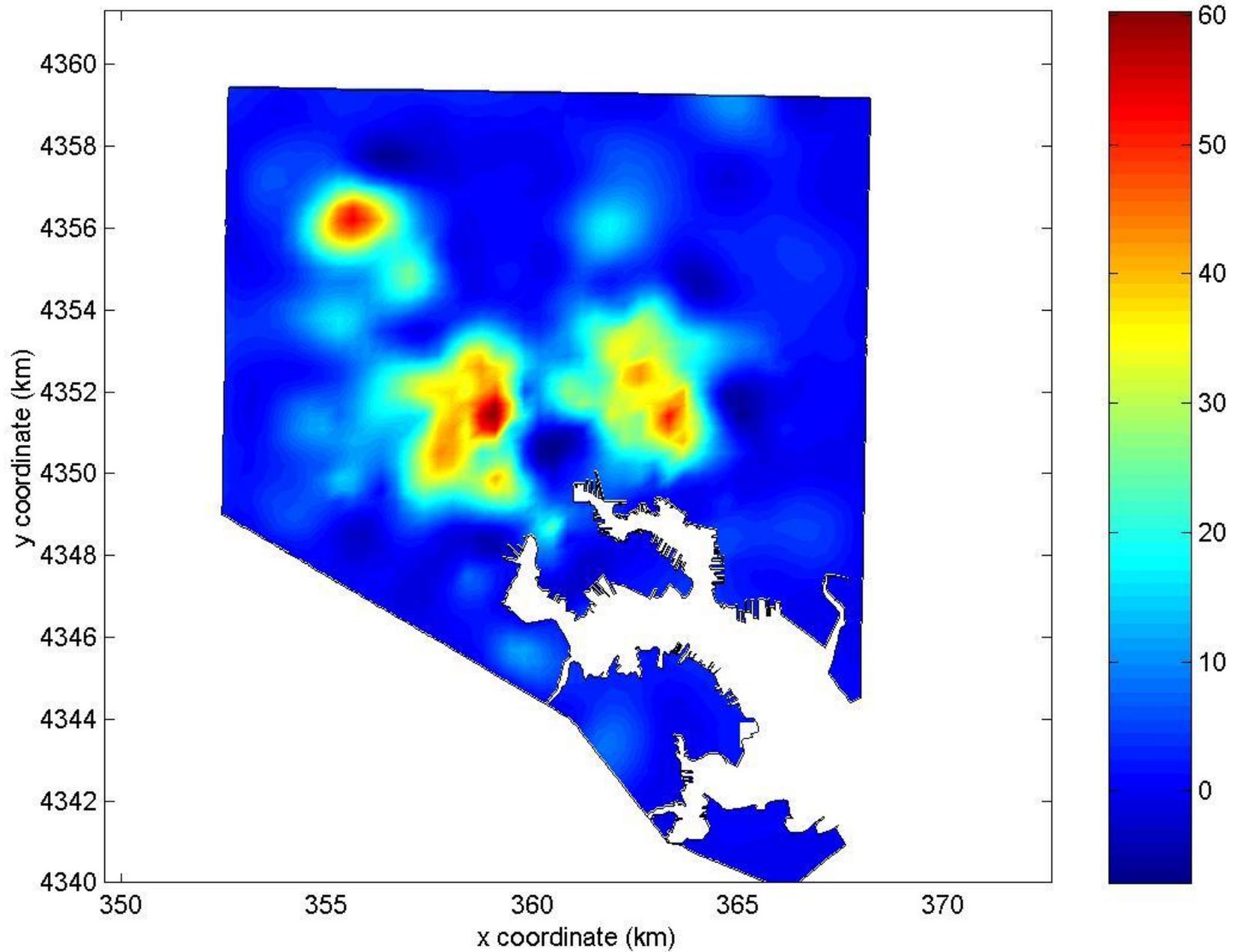
1996



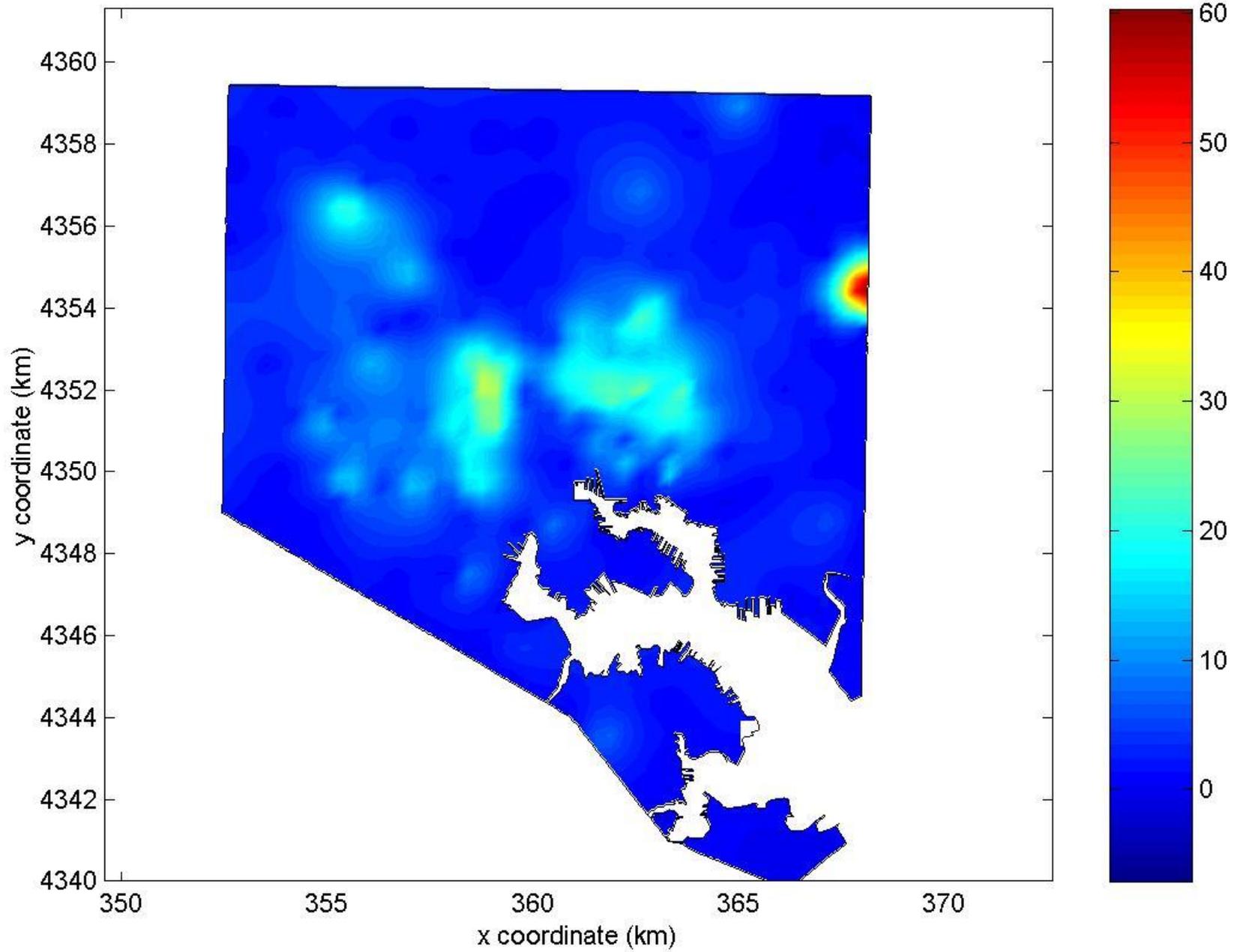
1997



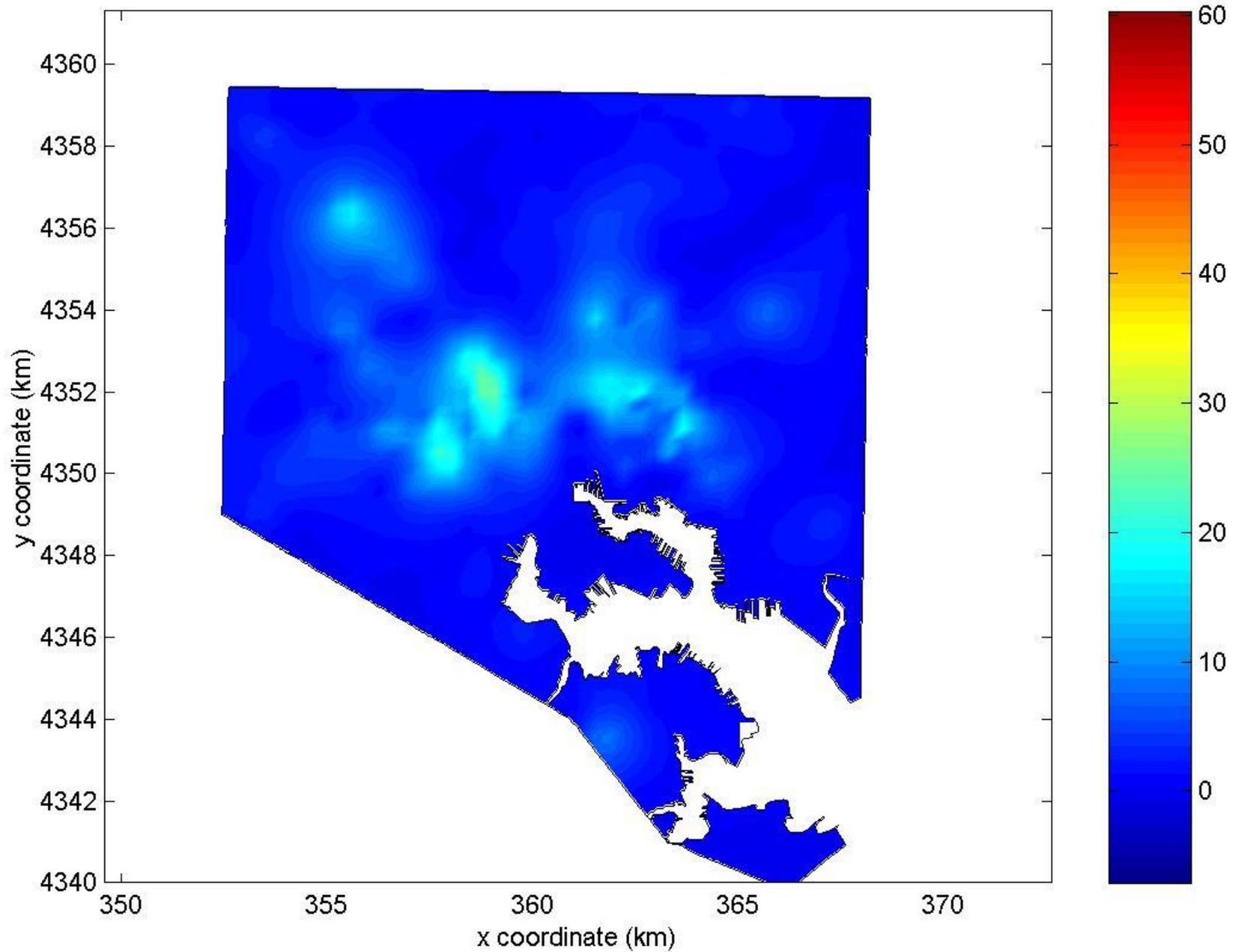
1998



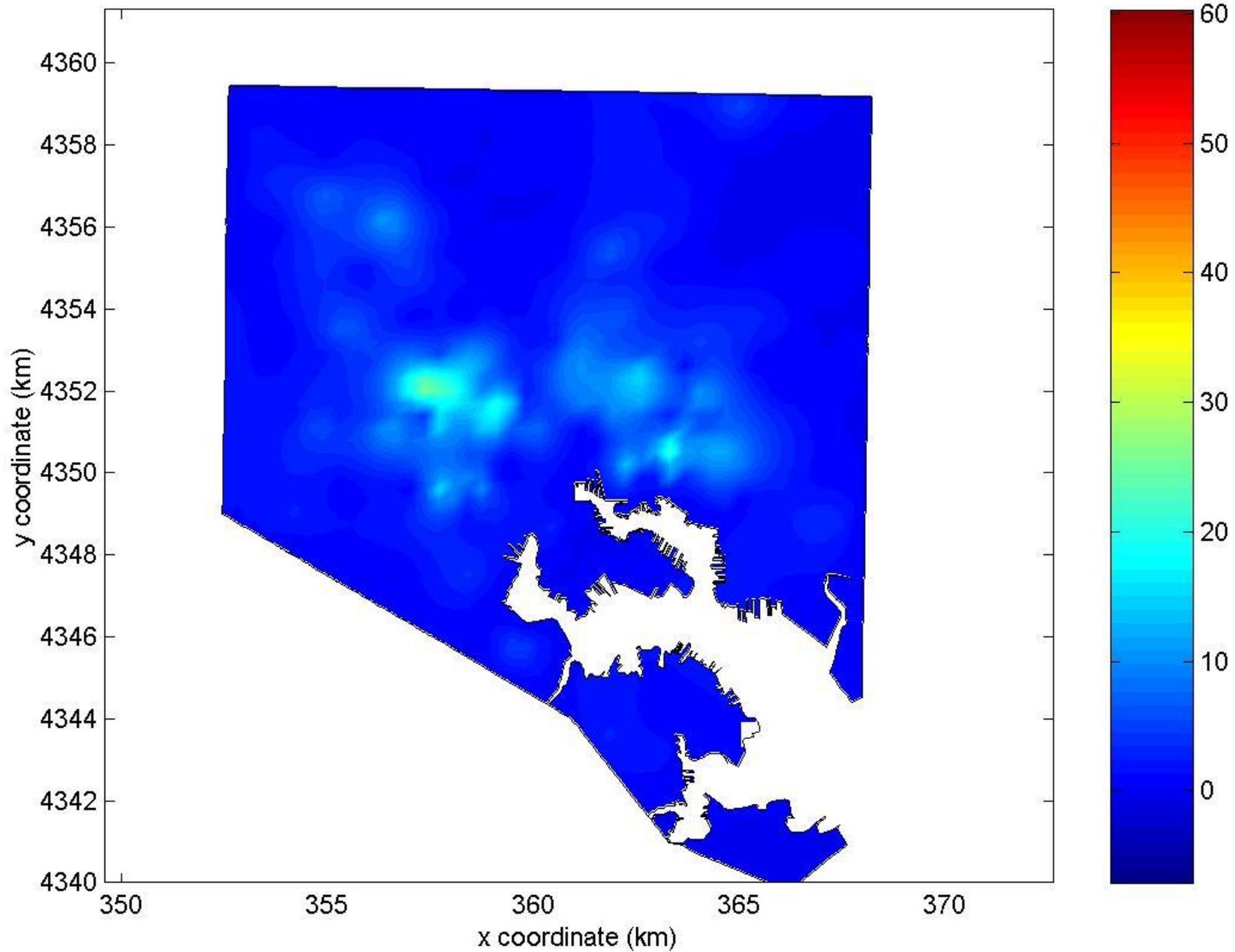
1999



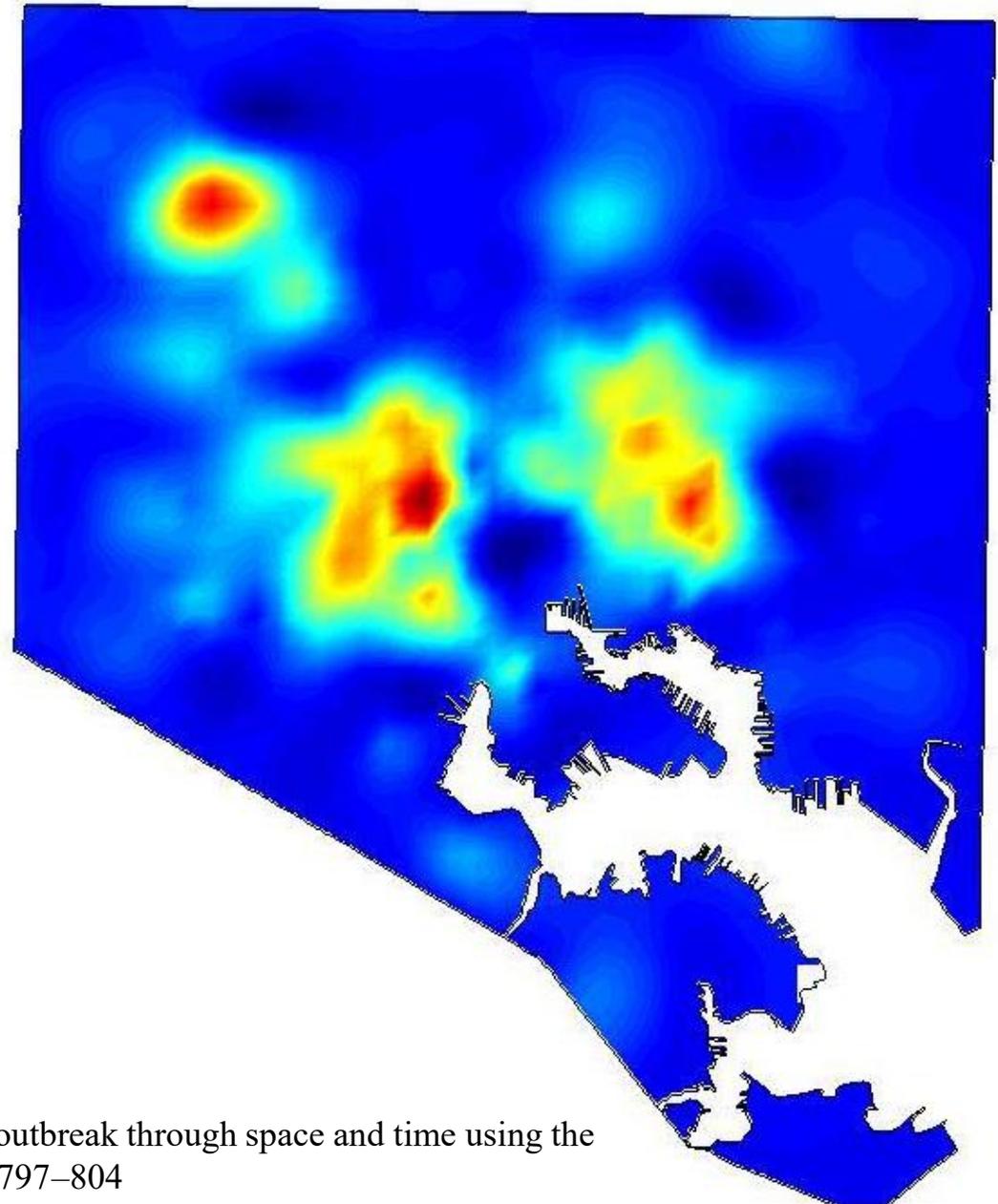
2000



2001



After the Epidemic



Gesink Law DC, Bernstein KT, Serre ML, et al. Modeling a syphilis outbreak through space and time using the Bayesian maximum entropy approach. *Ann Epidemiol.* 2006;16(11): 797–804



The Geography of Sex

The social process of partner selection

in the context of the spatial relationships between individuals

and

their natural and built environments.

The geographic distribution of STIs is influenced by the social process of partner selection and environmental context

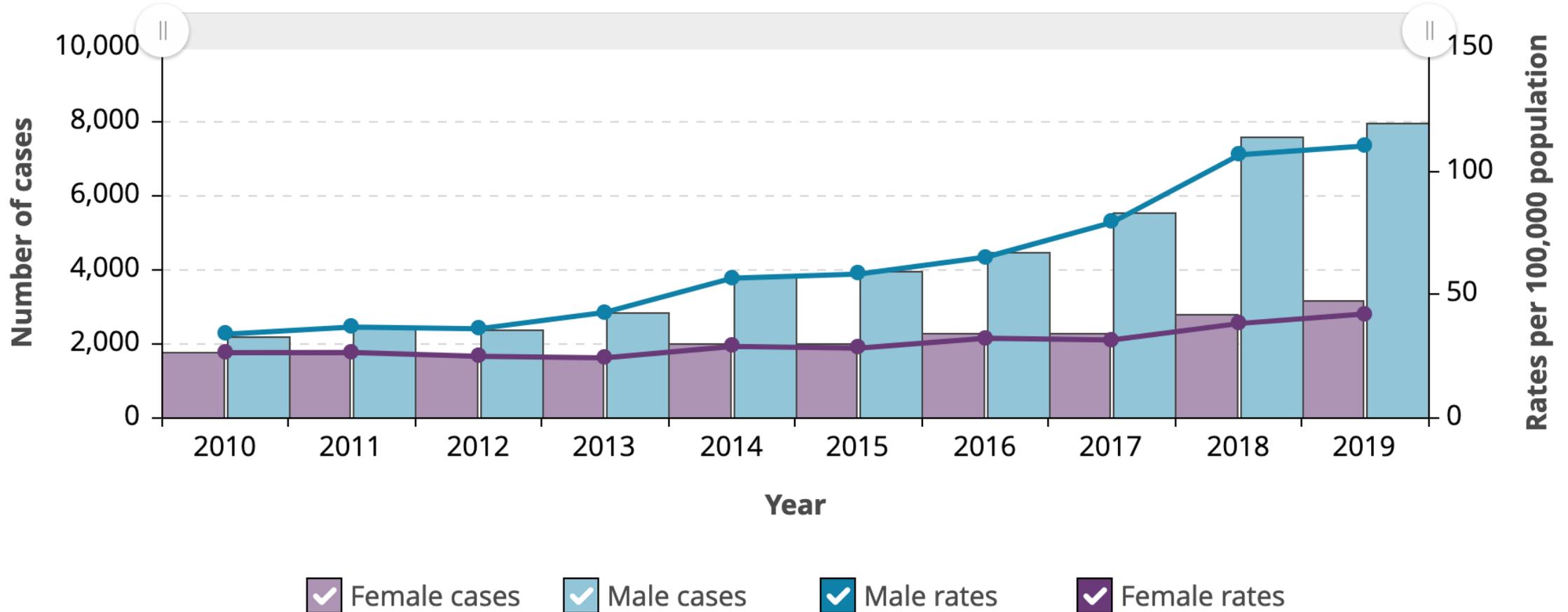
Local Environment



ent

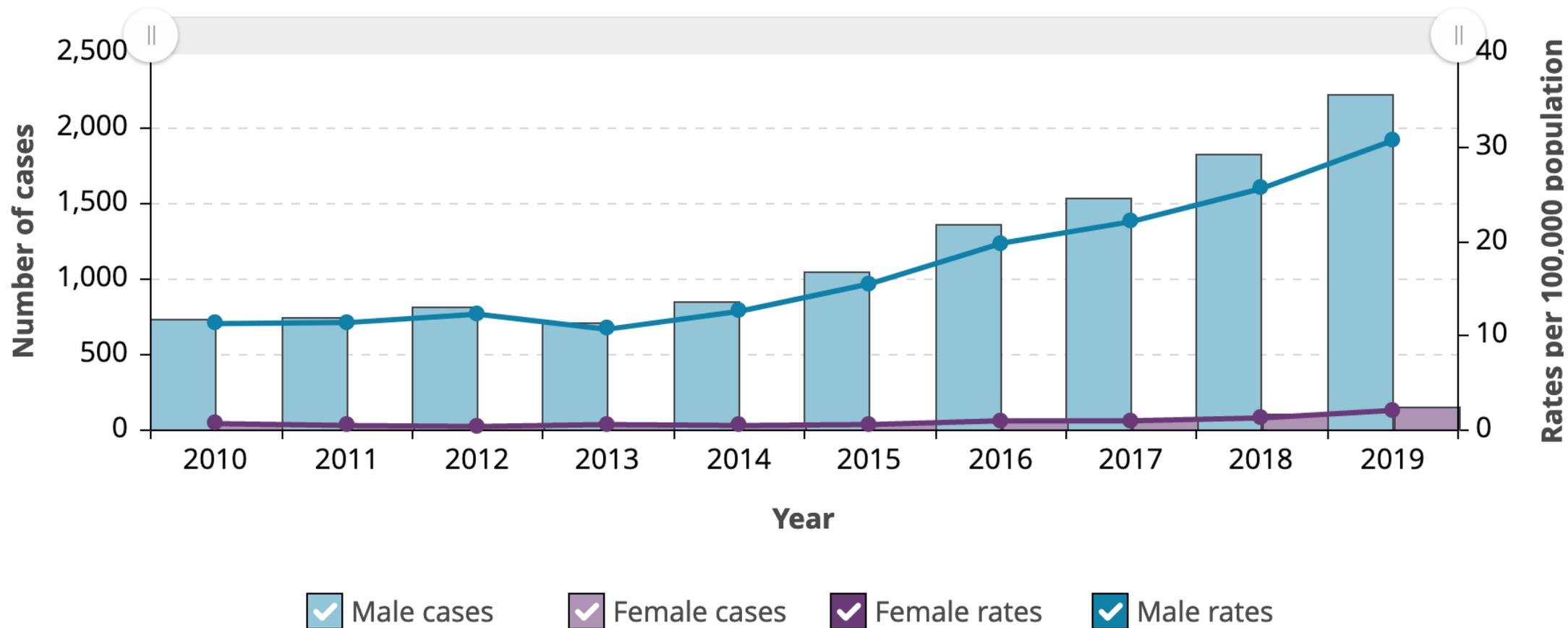


Gonorrhoea rates and cases for all ages, by sex, in Ontario



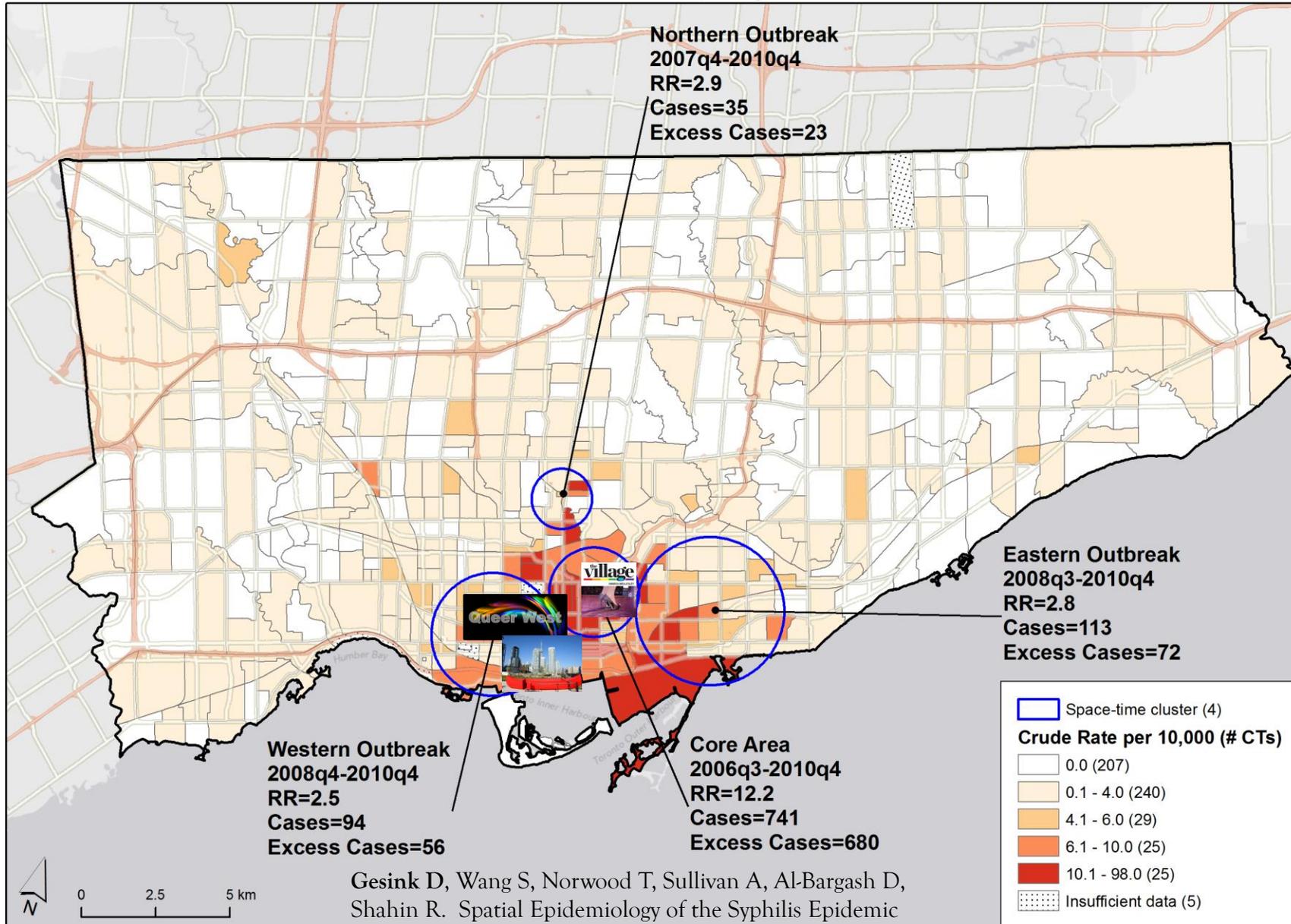
To see information on source data, classifications, citations, definitions and more, see the Infectious Disease Trends in Ontario, 2019: Technical notes <https://www.publichealthontario.ca/-/media/documents/idto-technical-notes.pdf>

Syphilis, infectious rates and cases for all ages, by sex, in Ontario

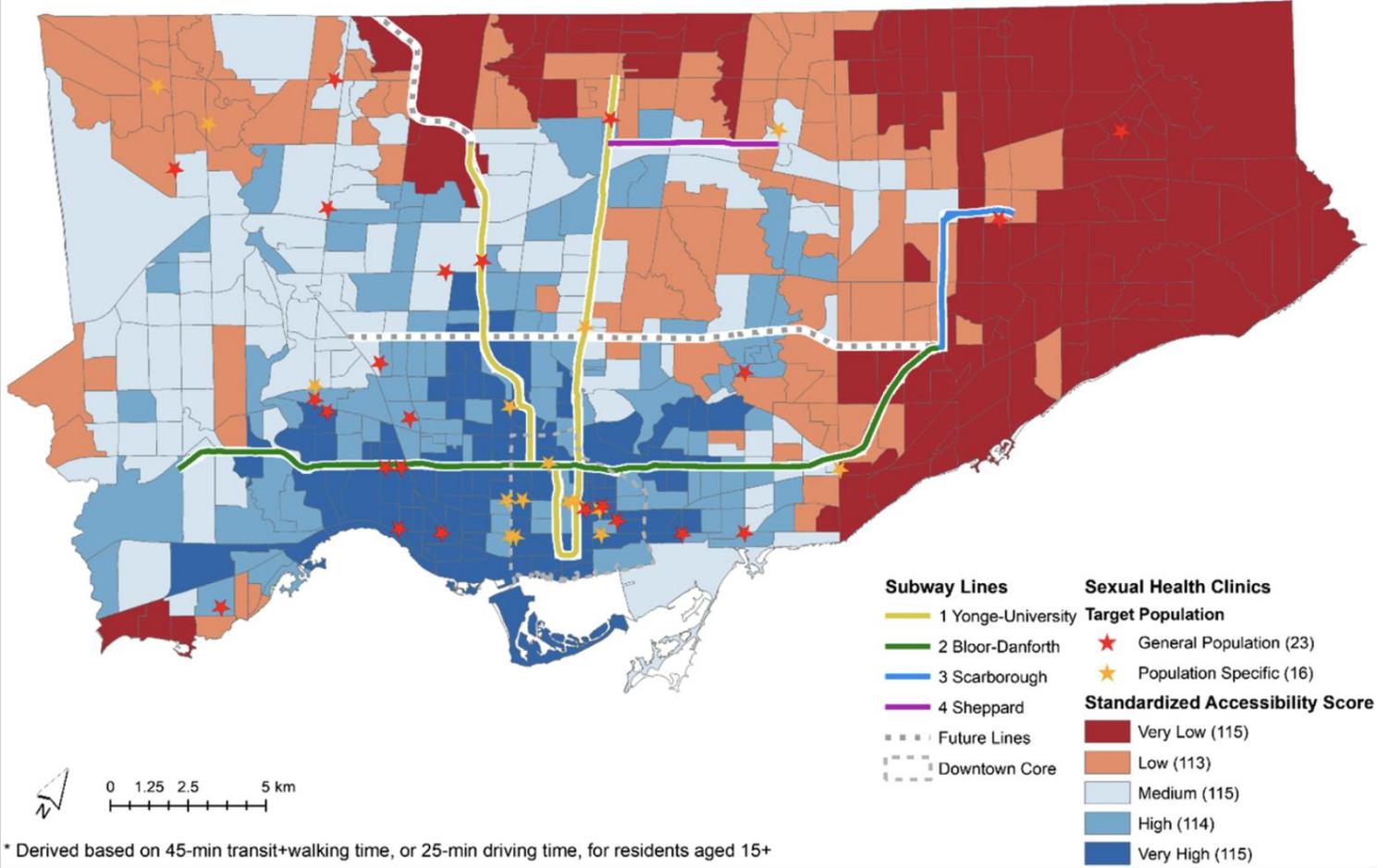


To see information on source data, classifications, citations, definitions and more, see the Infectious Disease Trends in Ontario, 2019: Technical notes <https://www.publichealthontario.ca/-/media/documents/idto-technical-notes.pdf>

Five year Syphilis Incidence Rate among Men by 2006 Census Tract, Jan 2006 to Dec 2010, City of Toronto



Census Tract Level Accessibility* to Sexual Health Clinics in Toronto

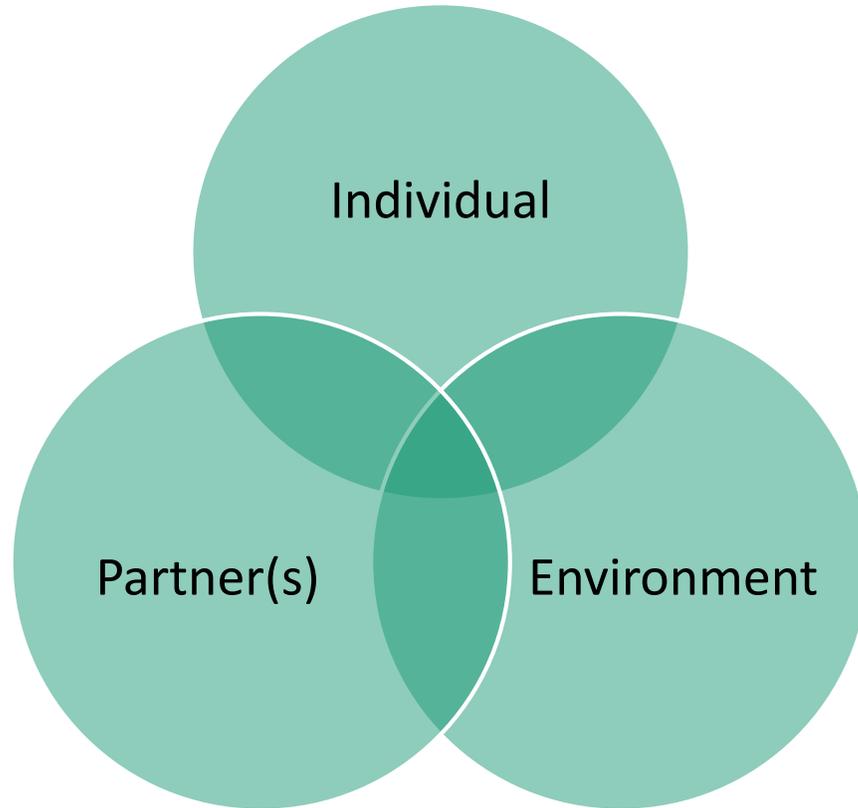


Wang S, Widener W, Burchell AN, Grace D, Gesink D. Spatial access to sexual health clinics measured through a novel accessibility score in Toronto, Canada. *STDs*. 2022 Jul 1;49(7):484-489



The Geography of Sex - Toronto

Purpose



- Study the spatial relationships between sexual partners, and their environments, for gay, bisexual, and other men who have sex with men (gbMSM) in Toronto, Canada
- Use results to inform response to the ongoing syphilis epidemic



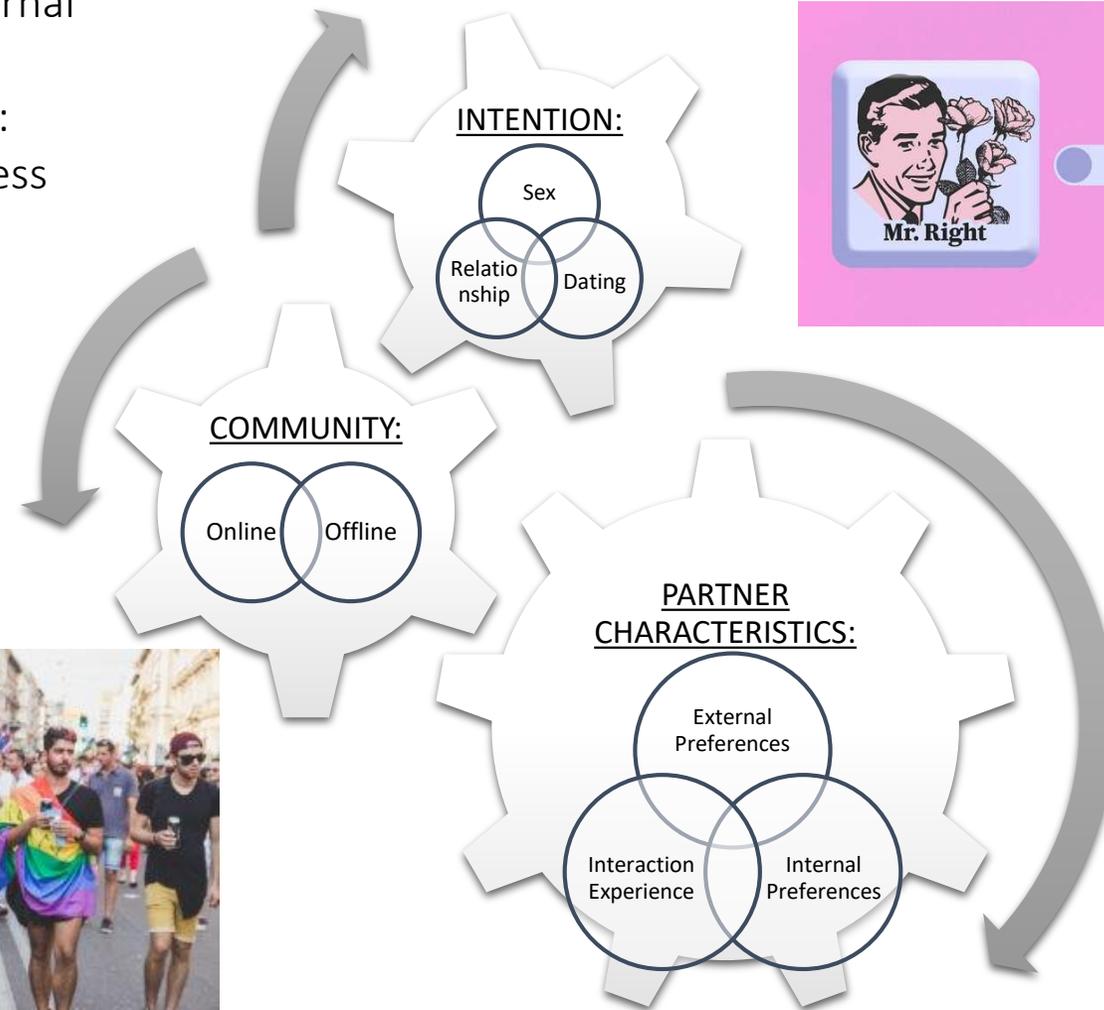
Interviews with 31
Sexual Minority Men
(June-July, 2016)

How Did Guys Find Partners?

Top Three External Partner Characteristics:

Characteristics:

- Attractiveness
- Geographic proximity
- Availability



Gesink D, Salway T, Kimura L*, Connell J*, Widener M, Ferlatte O. The Social Geography of Partner Selection in Toronto, Canada: A Qualitative Description of “Convection Mixing”. Archives of Sexual Behavior. 2020 Jul;49(5):1839-1851



Geosexual Archetypes



Symbols:

- ★ - participant residence
- - partner residence
- ▲ - sex place

Paths:

- Blue – Participant hosting sex
- Orange – Partner hosting sex
- Green – Travel to public venue for sex
- *dashed lines indicate partners met online

Geosexual Archetypes



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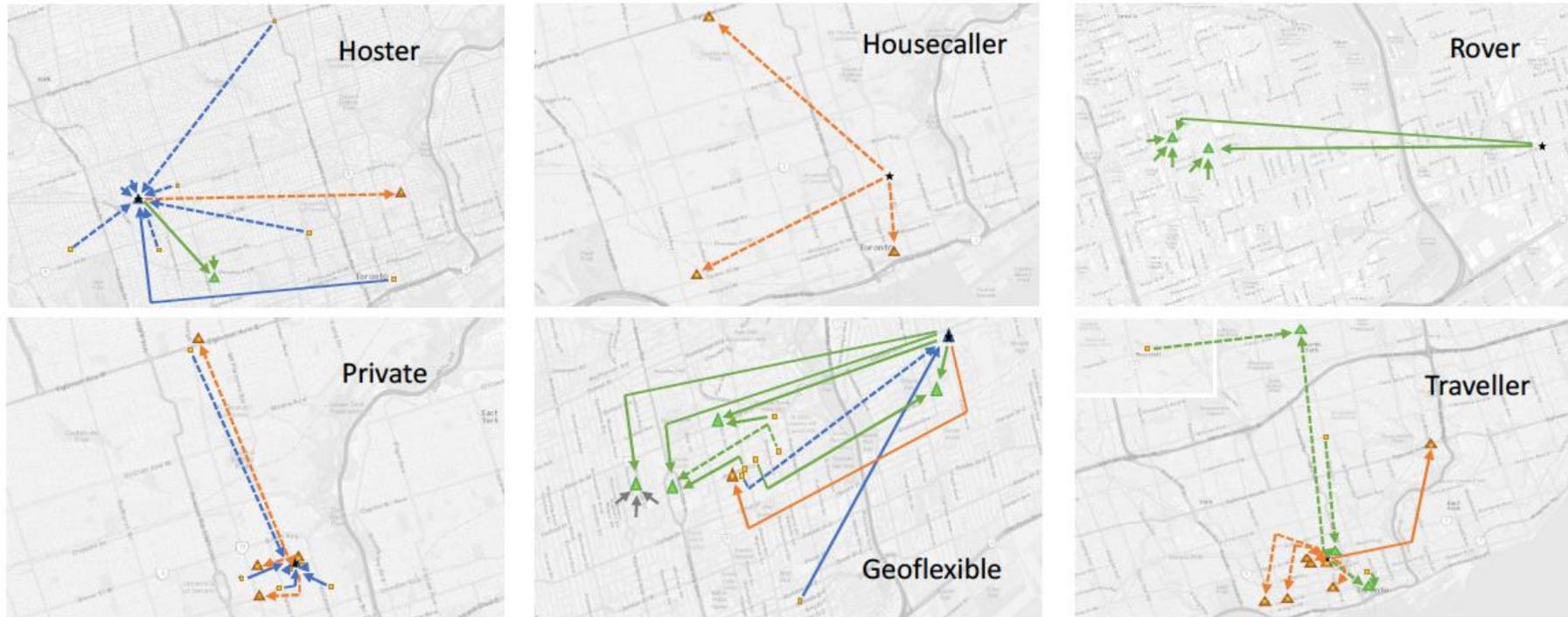
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Geosexual Archetypes



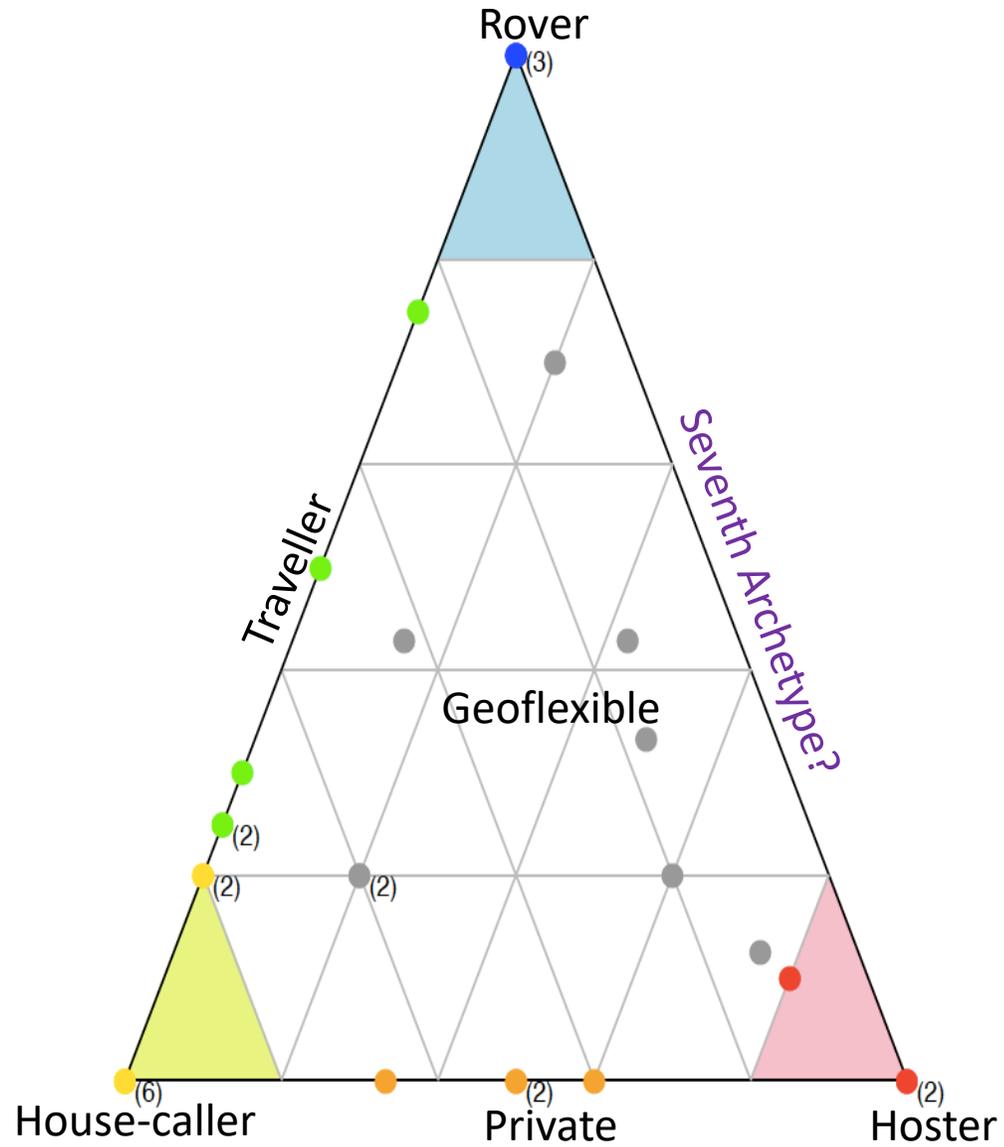
Symbols:

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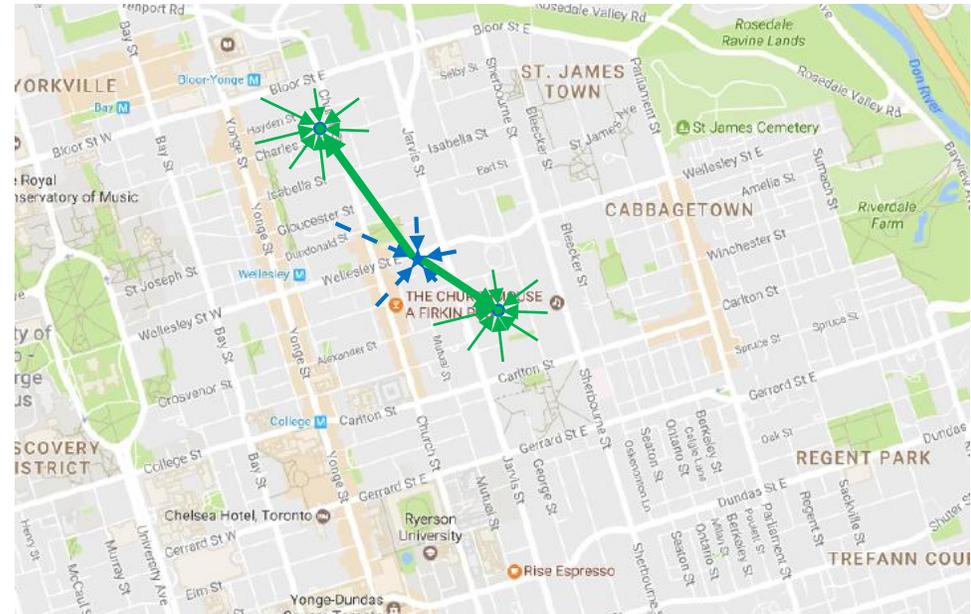
Paths:

- Blue – Participant hosting sex
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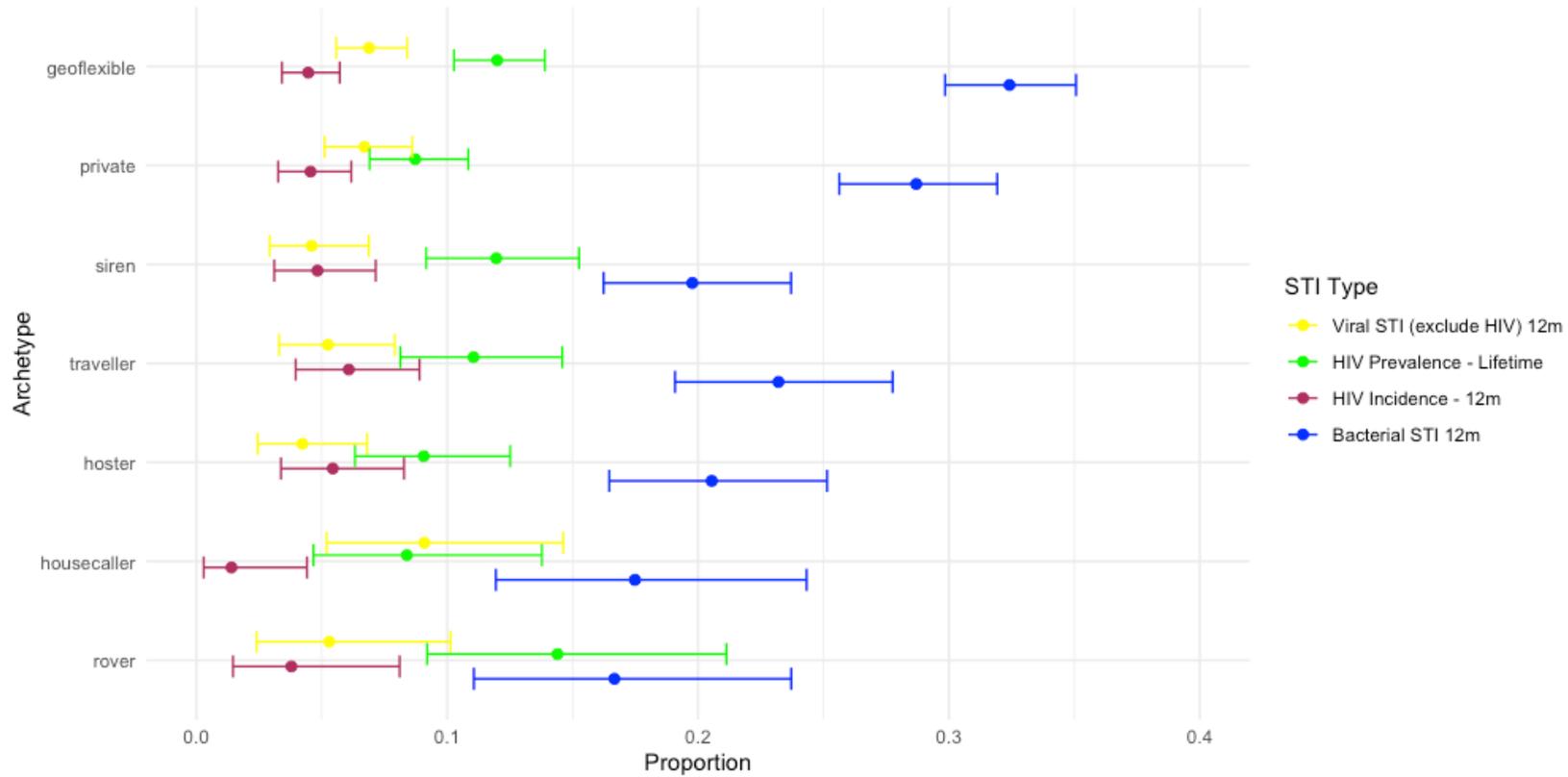
Characteristics	ALL	HOSTERS	HOUSE-CALLERS	PRIVATEES	ROVERS	TRAVELLERS	GEO-FLEXIBLES
Number of participants	31	3	8	4	3	5	8
Range of partners, preceding 3 months	1 to 10+	10+	1 to 10+	2 to 10+	4 to 5	4 to 10+	5 to 10+
Average # of partners, preceding 3 months	6	10+	4	5	4	5	7
Median # of partners, preceding 3 months	5	10+	3	4	4	4	7
% Of partners met online	70.1%	93.3%	78.8%	65.0%	0.0%	92.3%	60.0%
Range of distance travelled*	0 to 25.1km	0 to 7.5km	0 to 20.6km	0 to 5.7km	0.8 to 6.5km	0.6 to 25.1km	0 to 17.1km
Average distance travelled*	3.2km	0.4km	3.7km	0.9km	3.8km	7.6km	3.2km
Median distance travelled*	1.2km	0km	1.8km	0km	4.2km	5.1km	1.0km
Out of town (OOT) travels	9	0	3	2	0	2	2
Minimum OOT distance travelled	31.2km	--	44.6km	31.7km	--	36.5km	112.2km
Maximum OOT distance travelled	5991.7km	--	508.7km	70.8km	--	5991.7km	3392.0km
Average OOT distance travelled	1028.2km	--	215.6km	51.3km	--	3014.1km	1752.1km
Average age (years)	37	48**	42	31	45	26	36
% White	52%	100%	50%	75%	33%	40%	37%
% Tested for STIs, preceding year	87%	100%	50%	75%	100%	100%	100%
% Syphilis, ever	23%	100%	0%	0%	100%	0%	12%
% HIV	13%	33%	0%	0%	66%	0%	12%
% Gonorrhoea, ever	32%	67%	25%	25%	33%	20%	37%
% Chlamydia, ever	29%	33%	37%	0%	33%	0%	50%
% Herpes	13%	0%	0%	25%	33%	20%	12%
% HPV	13%	0%	25%	0%	0%	20%	12%



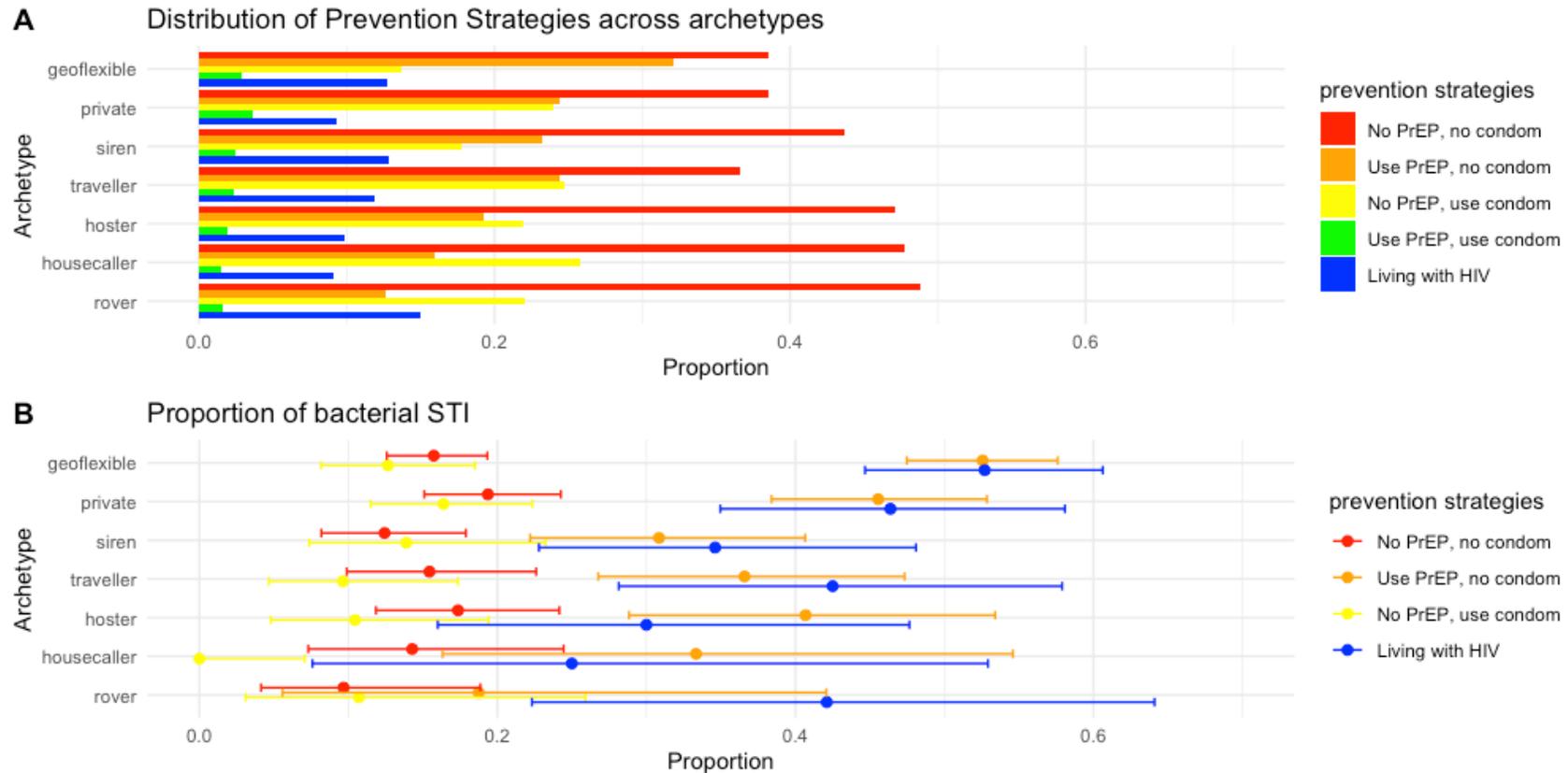
Hypothesis: *Sirens?*



Prevalence of STIs by Archetype using *Sex Now!* 2019 Data



Sex Now! 2019: Prevention Strategies



What Guys New About STIs and Syphilis

- Guys knew nothing about the syphilis epidemic in Toronto
- No knowledge of syphilis symptoms
 - Even if previously infected
- Little concern for syphilis, lots still for HIV
 - STI prevention centred around methods to prevent HIV transmission
- Asking about STI testing better than asking about STI status
- Mixed attitudes towards condoms:
 - Condom code
 - PrEP
- No one used condoms for oral sex

Gesink D, Salway T, Connell J, Kimura L. STI Knowledge and Attitudes Among Sexual Minority Men During Ongoing STI Epidemics in Toronto, Ontario: A Qualitative Study. *Sexually Transmitted Diseases*. 2020 Oct; 47(10):658-662



Geography and Sex

I work near [*major intersection downtown*], I'm mobile on a bike only, I don't drive. So basically, if you were within 2 or 3 subway stops of where I am at work, or 5- or 10-minute bike ride, I could engage with you. If you were 7 or 10 [subway] stops away, or in the suburbs, or somewhere that I couldn't bike to easily, I would not engage with you.

JC01, age 52, downtown-outbreak north





I would say about 90% of the time I'm travelling. ... I would say I'm travelling downtown, 'cause there's not really anyone in North York that I've come to know in that way. I think there's been like one or two guys um... and it was great but **one of them moved to Oshawa so... that was out of the question** [chuckles]. And then most of the other people that I do, if I see regularly, they're downtown so. I usually come downtown and then... go with them.

(JC16, 28, peripheral suburban)

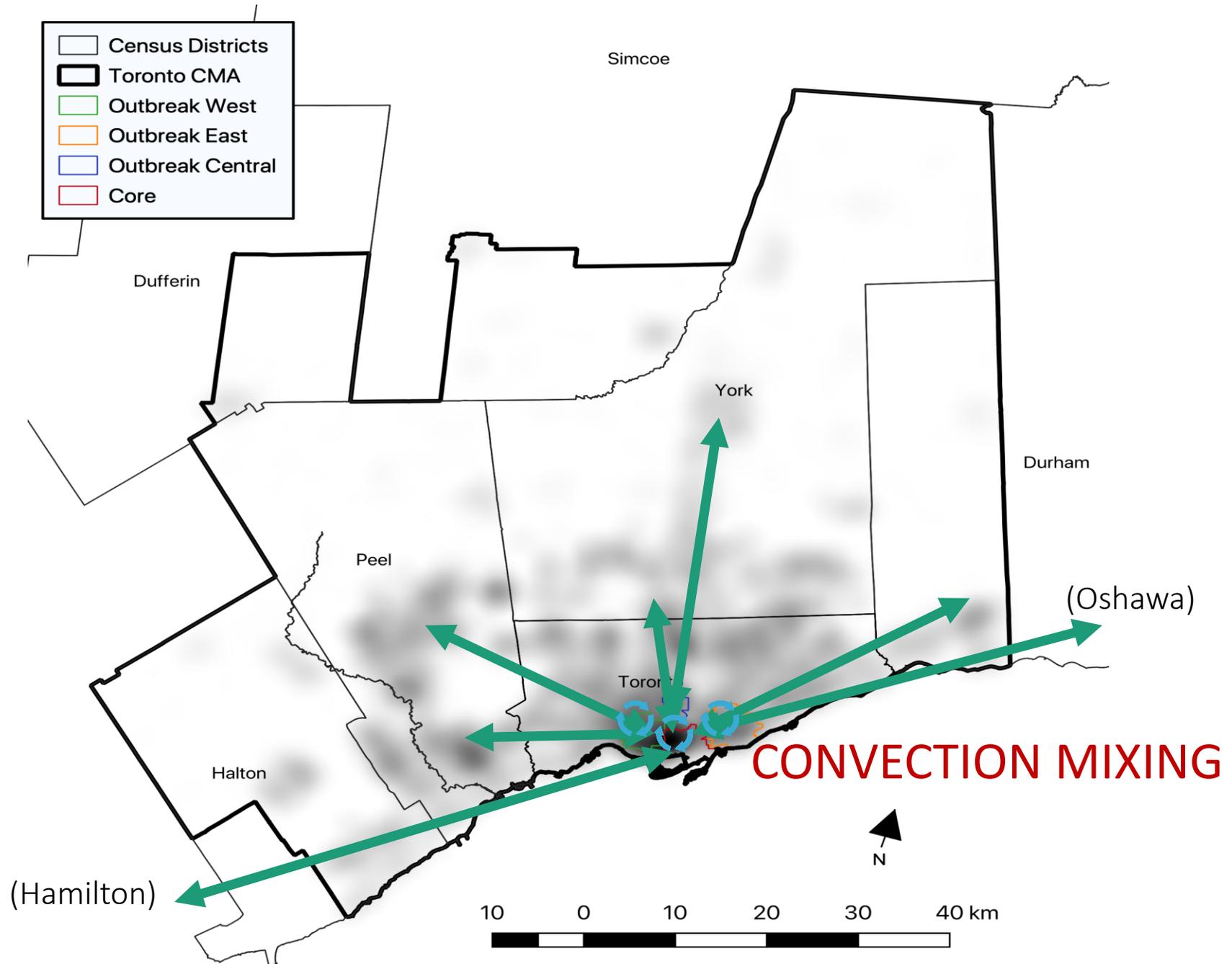
Social and Sexual Isolation

- ...when I was living downtown I was very sexually active and now that I'm in North York again it's kind of slowed down...
- (JC16, age 28, peripheral suburb)



Where Participants Travelled for Sex

	Where Participants Had Sex with Partners				
Participant Residence	Core	Outbreak	Suburb	Small City	Out of Province
Core (n=13)	57 (72%)	15 (19%)	3 (4%)	0	3 (4%)
Outbreak (n=10)	7 (11%)	50 (78%)	1 (2%)	2 (3%)	4 (6%)
Suburb (n=7)	20 (44%)	15 (33%)	8 (18%)	1 (2%)	1 (2%)



What Does The Geography of Sex Tell Us?

Guys are traveling from peripheral suburban areas...

Into the downtown STI core area looking for sex...

Not realizing, or caring, that there are ongoing STI epidemics...

Using HIV safer sex practices that do not necessarily protect them from bacterial STIs...

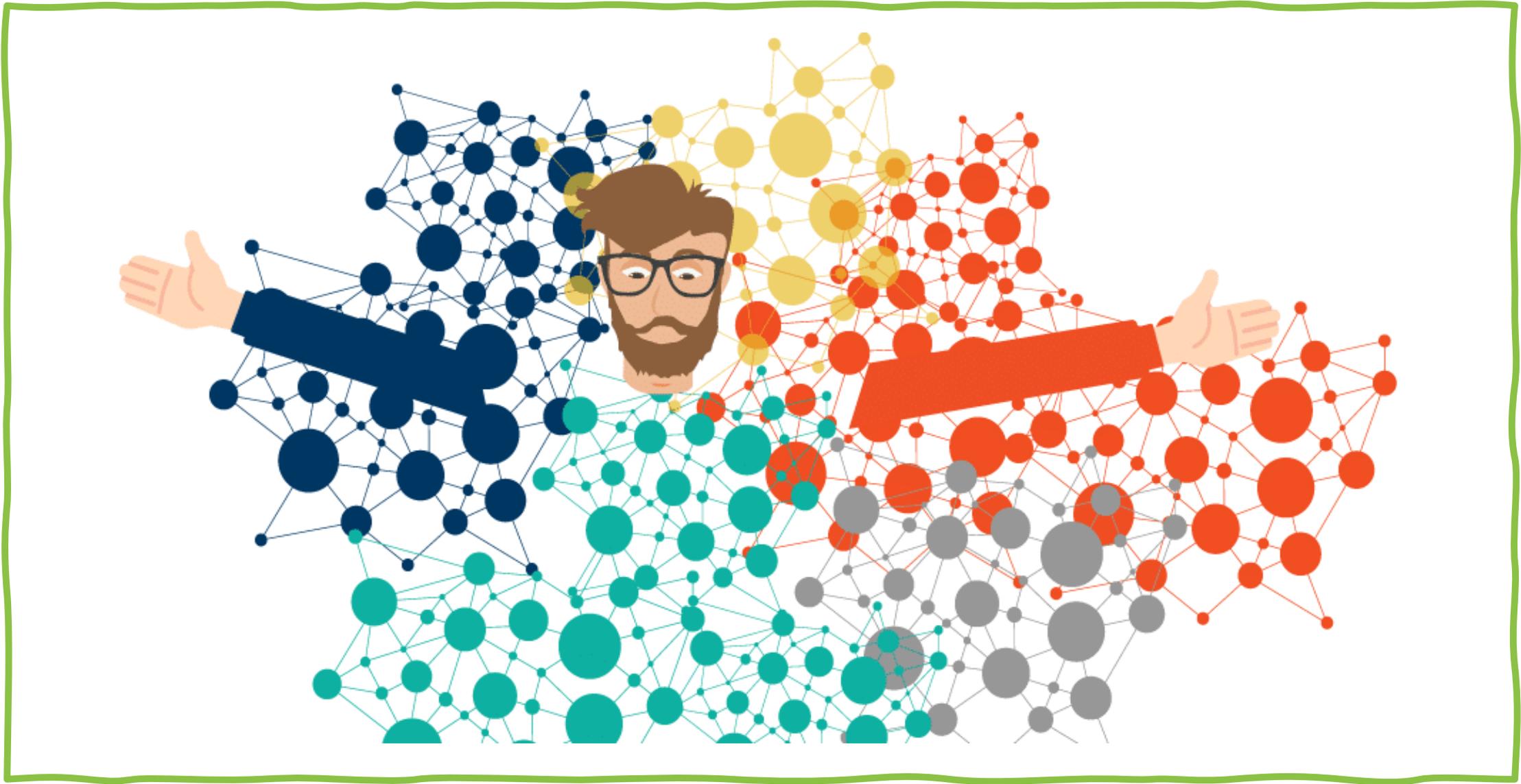
Returning home possibly with an infection...

Where they may conceal their sexual identity and sexual health resource are limited...

Returning to the core area later.

What Does This Mean About STI Transmission?

- Peripheral/suburban areas may be important reservoirs of STIs, re-inoculating urban core areas
- Core theory of STI transmission is not going to prevent STI transmission to peripheral areas or reduce the burden of STIs in peripheral reservoirs
- We need to pay more attention to what is happening in peripheral/suburban areas





The Geography of Sex - Peel

www.geographyofsex.ca



Dionne (U of T)



Hope (Moyo)



Winson (U of T/Moyo)



Michael (Moyo)



Laura (PHO)



Yoshi (Moyo)



Jodh (Moyo)

The Research Team



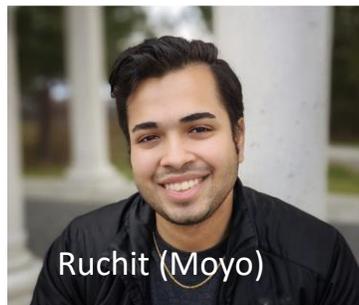
Chris (U of T)



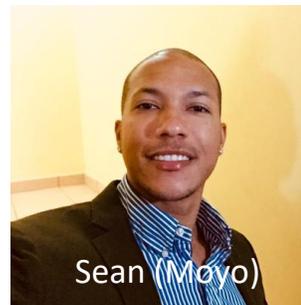
Manny (Moyo)



Joseph (U of T)



Ruchit (Moyo)



Sean (Moyo)



Sarah (U of T)



Jillian (Moyo)



Explore how peripheral MSM navigate their sexual lives and sexual health

- How peripheral MSM connect with social (including cultural, racial, ethnic, religious), sexual, and health service communities, and navigate sexual stigma
- Sexual health care practices and preferences of peripheral MSM

Interviews with 44
Sexual Minority Men
(June-Sept 2021)



Who Did We Talk To?

Gender:

- 7 non-binary, trans, fem-boy
- 37 cis-male

Age:

- Range: 21-63 years,
- Average: 28-29 years

Geography:

- Brampton, Mississauga, Toronto, Milton, Hamilton, Guelph, Cambridge

Race:

- Black (N=5)
- East Asian (N=2)
- Latino (N=4)
- Middle Eastern (N=2)
- Mixed (N=4)
- South Asian (N=14)
- South-East Asian (N=1)
- White/Caucasian (N=12)

What Did We
Ask Them
About?

Connectedness
and Belonging

Sex Life

Sexual Health

Activity Space

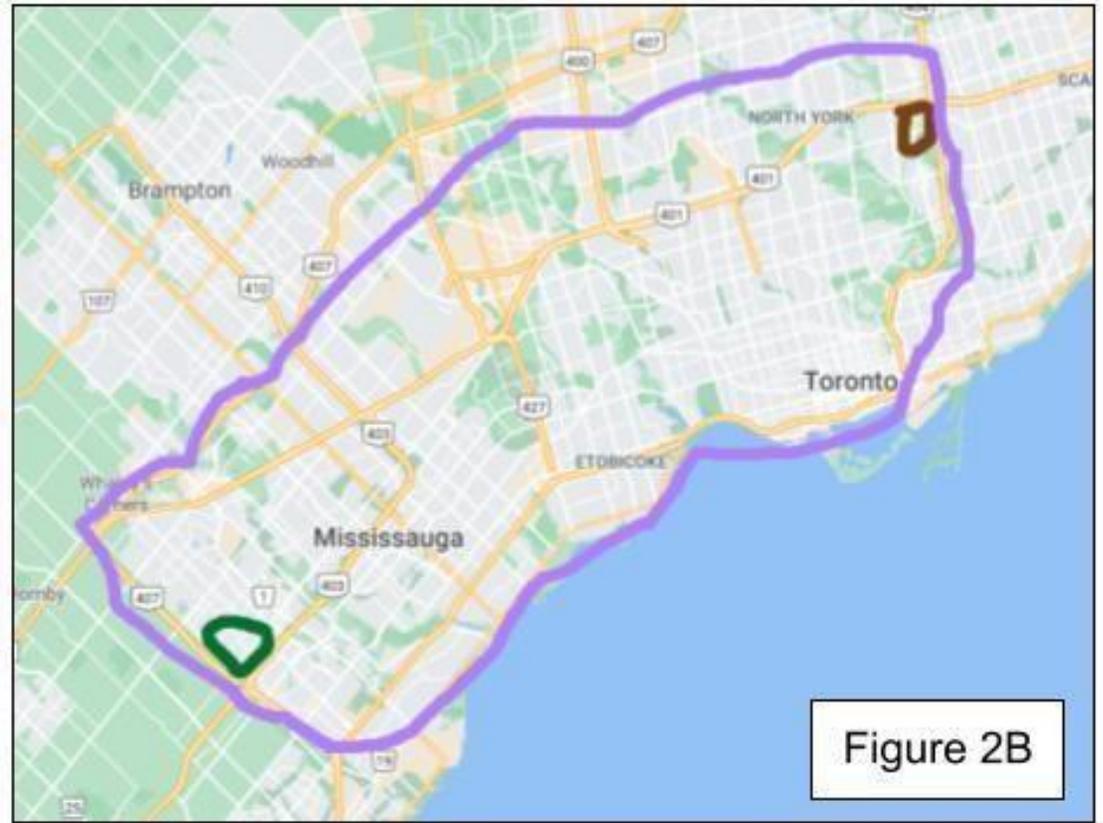
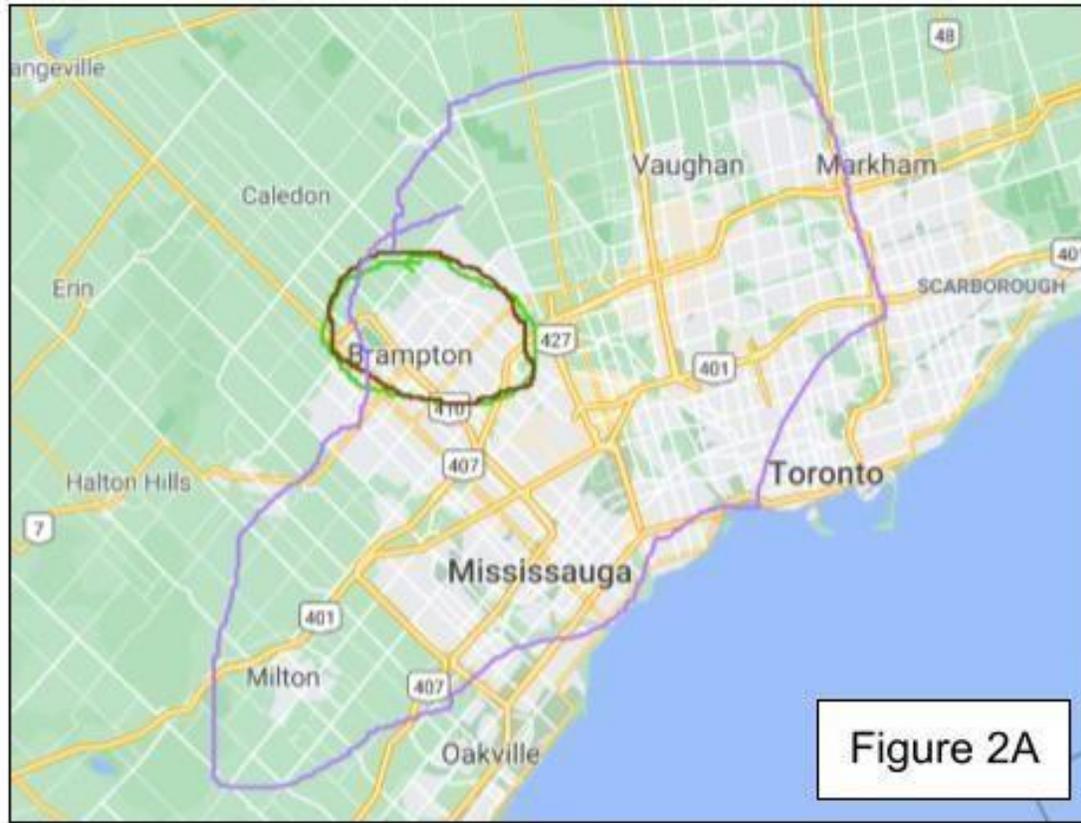


Figure 2. Separate participant-drawn maps making up the primary *overlapping* spatial activity space pattern in Toronto, Canada, 2021. Figure 2A shows a *bull's eye* variation where residential (green), work (brown), and socialization (purple) areas overlap simultaneously. Figure 2B shows a *ranged* variation where the larger socialization (purple) activity space is bookended by work (brown) and home (green) activity spaces.

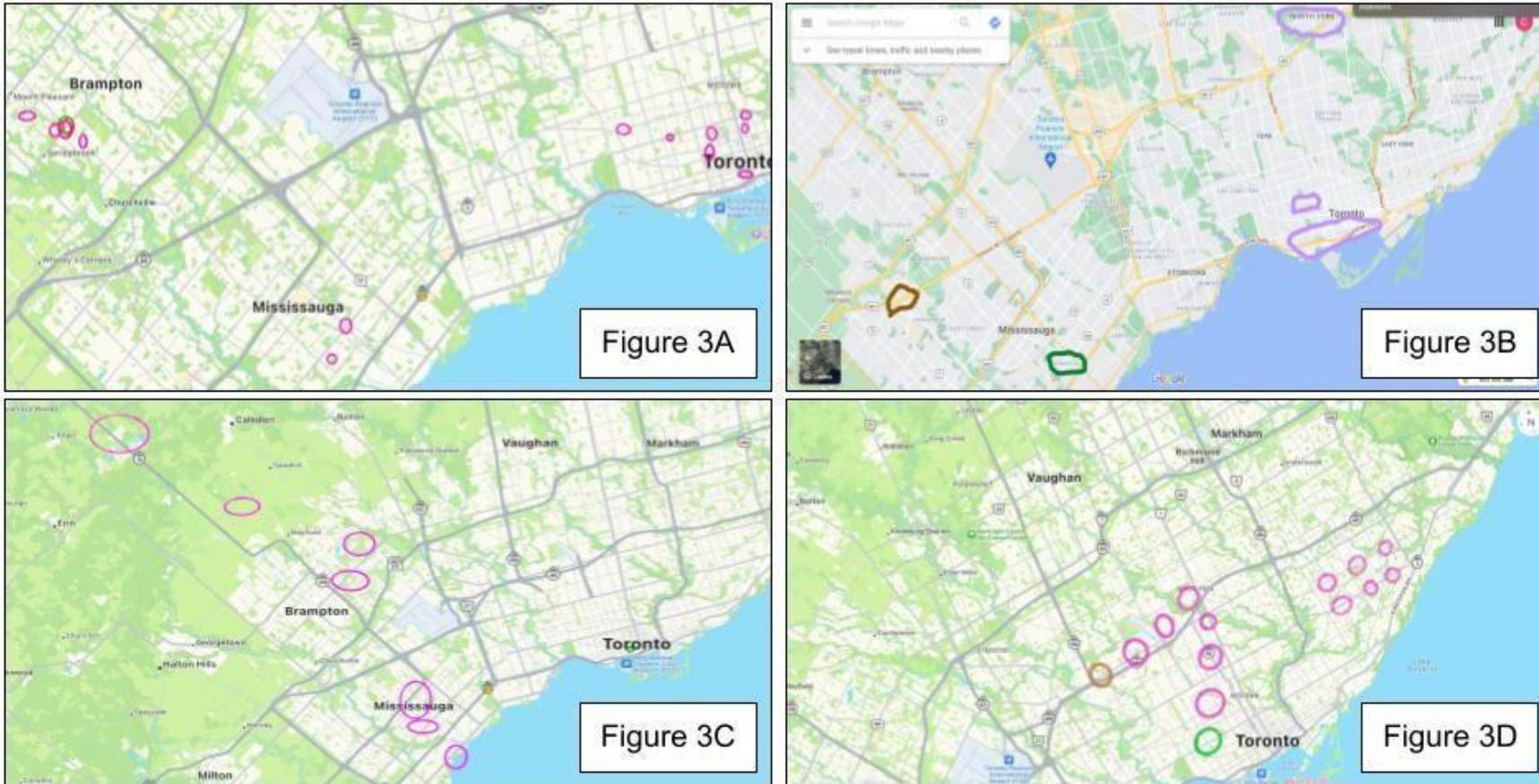


Figure 3. Separate participant-drawn maps making up the primary *non-overlapping* spatial activity space pattern in Toronto, Canada, 2021. Figure 3A shows a *clustered* variation where activity spaces are clustered in isolated groups. Figure 3B shows a *density-based clustering* where activity spaces are concentrated near highly dense geographies. Figure 3C shows a *random* variation in which activity spaces present a non-identifiable pattern. Figure 3D is an example map theoretically demonstrating two different *uniform* variations.

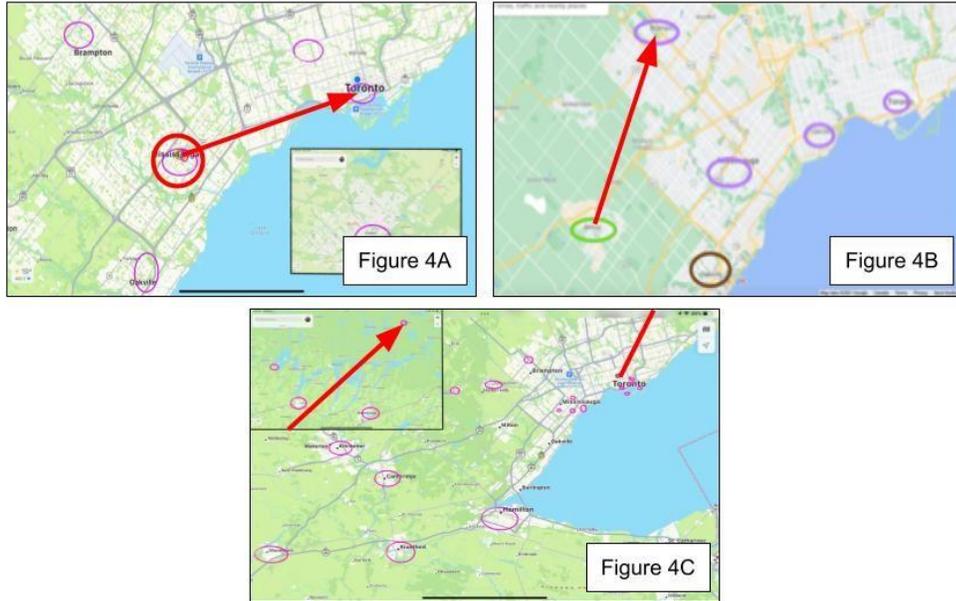


Figure 4. Separate participant-drawn maps showing degrees of movement from urban residential fixed points of reference in Toronto, Canada, 2021. Figure 4A shows internal urban-to-urban activity (red circle) and external urban-to-urban activity (arrow). Figure 4B shows urban-to-suburban activity. Figure 4C shows urban-to-rural activity. Note that the red arrow in Figure 4C is disrupted in the main map, but is continued in the smaller representation at the top left.

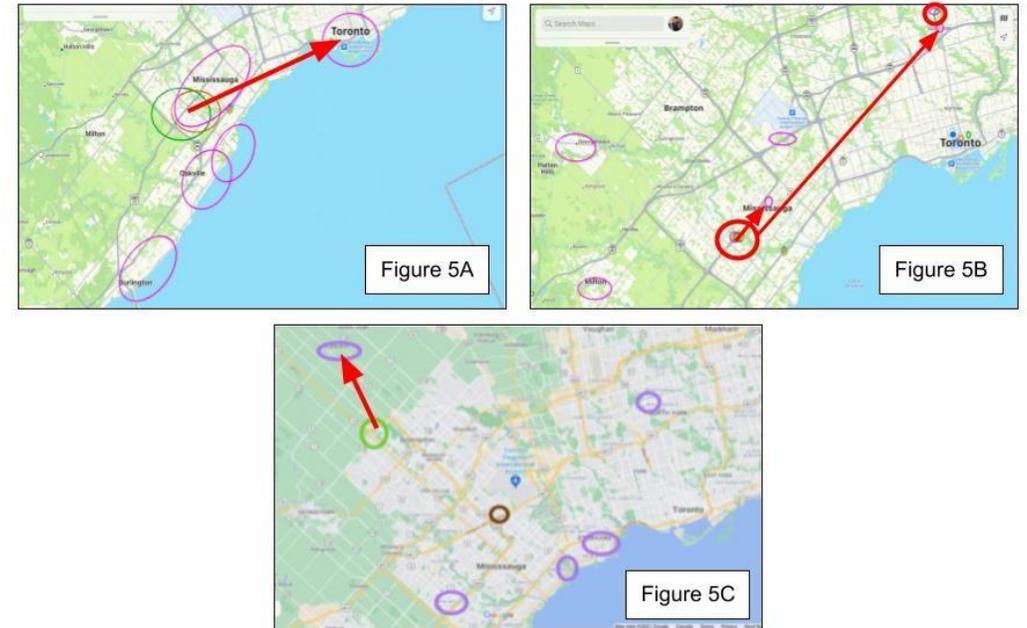


Figure 5. Separate participant-drawn maps showing degrees of movement from suburban residential fixed points of reference in Toronto, Canada, 2021. Figure 5A shows suburban-to-urban activity. Figure 5B shows internal suburban-to-suburban activities (red circles) and external suburban-to-suburban activities (arrows). Figure 5C shows suburban-to-rural activity.

What Did We
Ask Them
About?

Connectedness
and Belonging

Sex Life

Sexual Health

Activity Space

What Were We Told?

No one size fits all

Health care deserts

Health care access

Outness

Impact of COVID

No "One size fits all" approach to meeting sexual health needs

Geography of services:

- Some seek nearby services in Peel
- Others travel to Toronto
- Others seek services when traveling out of country

Motivations when selecting services

- Level of outness
- Desire for high quality care (well-informed providers)
- Friendly, non-judgmental
- Some prefer shared cultural/religious background, others do not

Accessing a wide variety of services

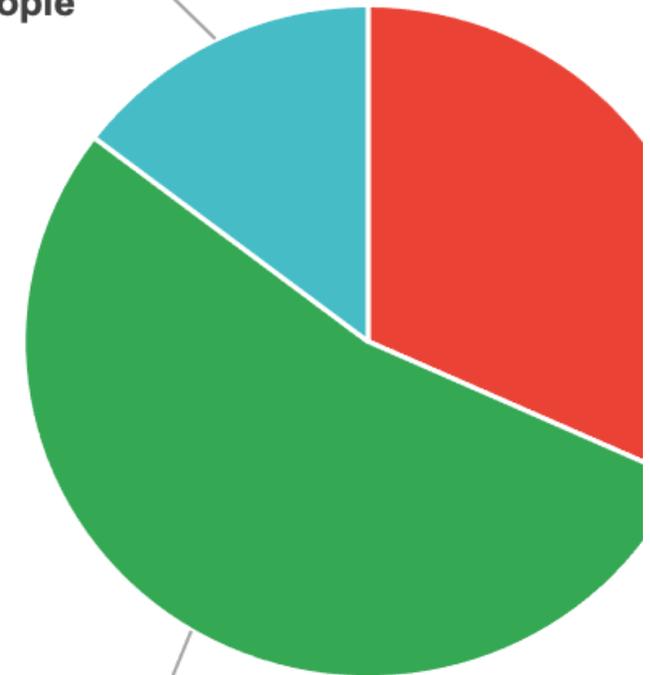
- STI clinics, HIV or PrEP clinics
- Family doctors
- LGBT-specific clinics
- Breastfeeding clinics
- Private labs (I.e., Lifelabs)

Outness as a driver of provider selection

Varying rationale when weighing outness and choice of provider

- Services that are "under the radar" (i.e., family doctor) perceived as safer
- Fear of judgement from family doctor (especially if shared with parents or from same cultural background)
- Some seek LGBTQ specific clinics; *prefer* to travel far (i.e., from Peel to downtown Toronto) for discretion, anonymity, geographic buffer
- Others would like LGBTQ friendly clinics close to home.

Out to some people



Out to most people

What makes a negative experience?

Difficulty scheduling an appointment

Long wait times in the clinic

Perceive that provider has low knowledge on STI transmission, symptoms, PrEP

Difficulty finding family doctor who is affirming

Confidentiality fears

Referrals leading to dead ends

Cost of PrEP

What Makes a Positive Experience?

Information readily available on website

Symbols to demonstrate LGBTQ-friendly space*

Friendly and affirming staff

Ease of scheduling

Fast – no long wait times to schedule appointment, while in clinic, etc.

Confidentiality

Provider is knowledgeable about LGBTQ sexual health (STIs, PrEP)

Physician from shared cultural / religious community desirable to some (if LGBT friendly)



Impact of Covid-19 on sexual health access

Pandemic had mixed impact on access to sexual health care:

- For some, faster and easier than usual (i.e., scheduled for specific appointment window, in and out of clinic quickly, increased remote access to testing or telehealth.)
- For others, COVID resulted in local clinics reducing capacity, impossible to schedule appointment, etc.

Stigma & COVID-19



- Fear of judgment for needing an STI test during time of lockdown or social distancing.
- Fear COVID-19 exposure while seeking services.

**Preliminary
Recommendations**

Increase
access

Urgent need for more permanent LGBTQ friendly sexual health resources in Peel

Broad
approach

Improve baseline level of LGBTQ friendliness and sexual health competency across all healthcare providers

Innovation
at STI/PrEP
clinics

Explore innovations in services to improve accessibility, efficiency, and patient experience



“...hook gay people up with gay medical support...”

Increase sexual health resources in non-urban areas



END SHAME



Questions and Discussion



DOES ANY OF THIS RESONATE
WITH OTHER PARTS OF ONTARIO?



WHAT SHOULD WE DO NEXT →
PRIORITIES FOR PHO?



Questions? www.geographyofsex.ca

Participants: How Did They Find Us?



Instagram	17
Meds Expert	1
Maple Leaf PrEP Clinic	13
Friend	7
Hookup Partner	1
Meetup.com	1
Pornhub	2
Woodys	3
Peel Service Provider	4

