



Provincial Health Services Authority

## Cool Playgrounds

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November 10, 2022

# Presentation Outline

1. Background – BC Cancer Prevention & Sun Safe BC
2. Shade for skin cancer prevention
3. Co-benefits of shade
4. Cool Playground case studies:
  - Tennyson Childcare Centre
  - UBC Promoting Early Childhood Outdoors (PRO-ECO) Dappled Light study
5. Knowledge Translation

# BC Cancer Prevention

## Encouraging adoption of positive health behaviours and environments that address cancer prevention risk factors:

- Tobacco
- Nutrition
- Physical Activity
- **Sun Safety**
- Radon Exposure
- Air Pollution
- HPV Infection
- Alcohol
- Body Weight



# Skin Cancer in Canada

- Most common cancer - **one third** of all new cases of cancer in Canada are skin cancers, and rate continues to rise.
- Frequent sun exposure and sunburn in childhood sets the stage for higher rates of melanoma later in life.
- Melanoma is one of the most common cancer types found in young adults aged 15-29 and 30-49.
- Children are at higher risk of overexposure to UV radiation since a large proportion of UV exposure occurs during childhood, particularly during outdoor recreation.

Skin cancer is the **MOST COMMON** cancer

Affects over **80,000 people** each year

*Good news is that **skin cancer is largely preventable!***



**Purpose statement:** To work collaboratively to reduce the risk of exposure to Ultraviolet (UV) and increase health promotion messaging and education around damaging ultraviolet light radiation for children and youth under the age of 18.

## **Membership:**

- BC Cancer Prevention & Screening
- Canadian Cancer Society
- Canadian Dermatology Association
- CAREX Canada
- Vancouver Coastal Health
- Northern Health
- Save Your Skin Foundation
- Melanoma Network
- University of British Columbia
- Society for Children & Youth
- BC Cancer Research Centre
- BC Cancer Indigenous Cancer Control Strategy
- Island Health
- Fraser Health

# Action Areas

## Action Area #1



Change attitudes, knowledge and behaviour around sun safety

## Action Area #2



Strengthen capacity among priority population service providers and educators

## Action Area #3



Create supportive environments to limit exposure to UVR exposure

## Action Area #4



Seek to influence sun safe policies advancing toward provincial policy creation or amendments when and where possible

Enhance Shade

Shade Policy



SunSafeBC

# The Many Benefits of Shade.....

**Shade while outdoors can reduce exposure to UV radiation by 75%.**

... and there are many other benefits of shade:

## **Health benefits**

- Improves thermal comfort
- Increases recreational and physical activity outdoors
- Reduces obesity and risk of chronic disease
- Improves mental health)

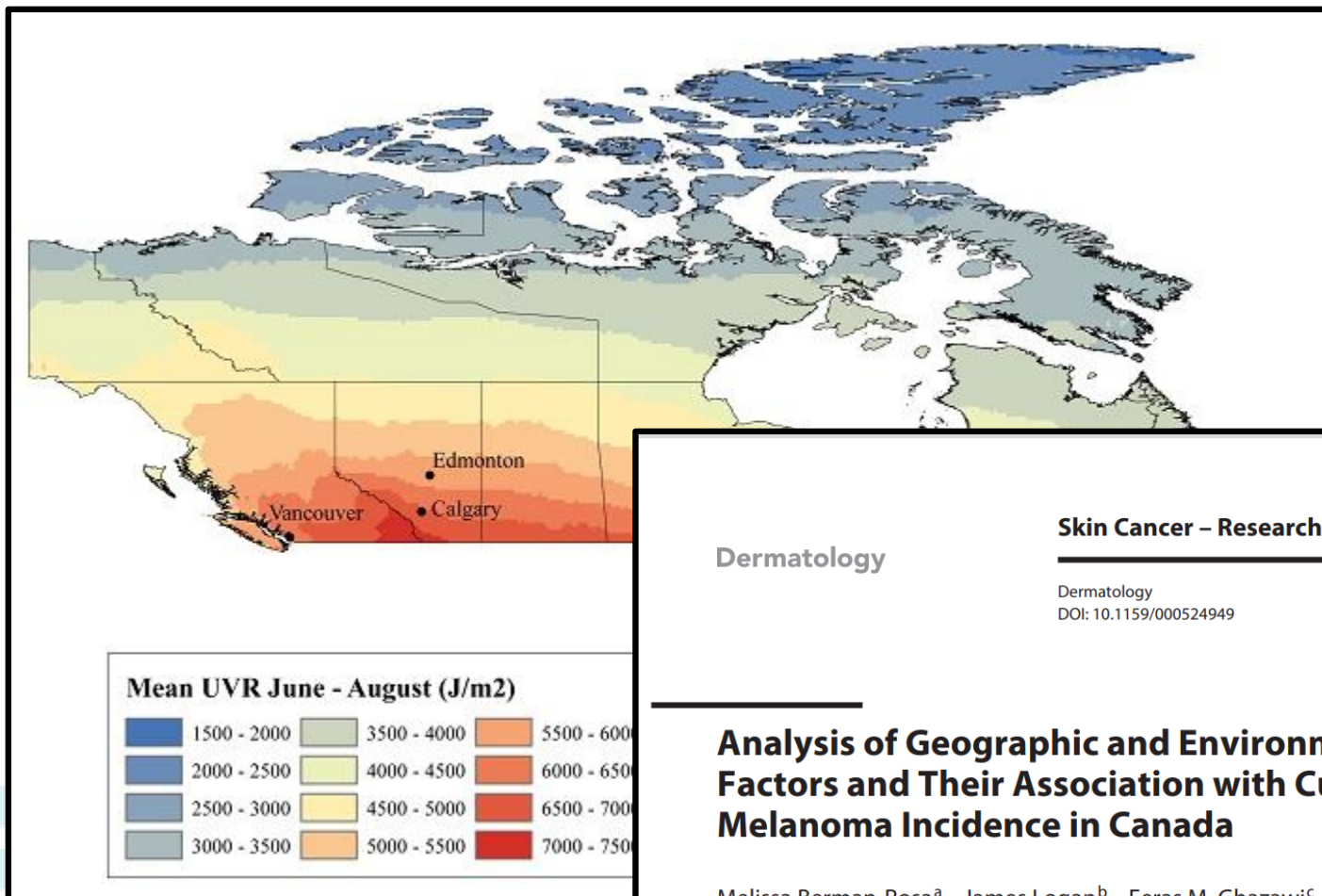
## **Environmental Benefits**

- Mitigates urban heat
- Decreases air pollution and atmospheric carbon
- Reduces water evaporation
- Soil erosion and storm water run-off
- Maintains animal habitat and biodiversity)

## **Social and Economic Benefits**

- Improves social and community connection
- Reduces neighbourhood crime
- Improves connection to culture and place (placemaking)
- Increases land and property value  
Reduces energy usage and costs))

# UVR and Heat Trends in BC



Source:

CAN

## Dermatology

### Skin Cancer – Research Article

Dermatology  
DOI: 10.1159/000524949

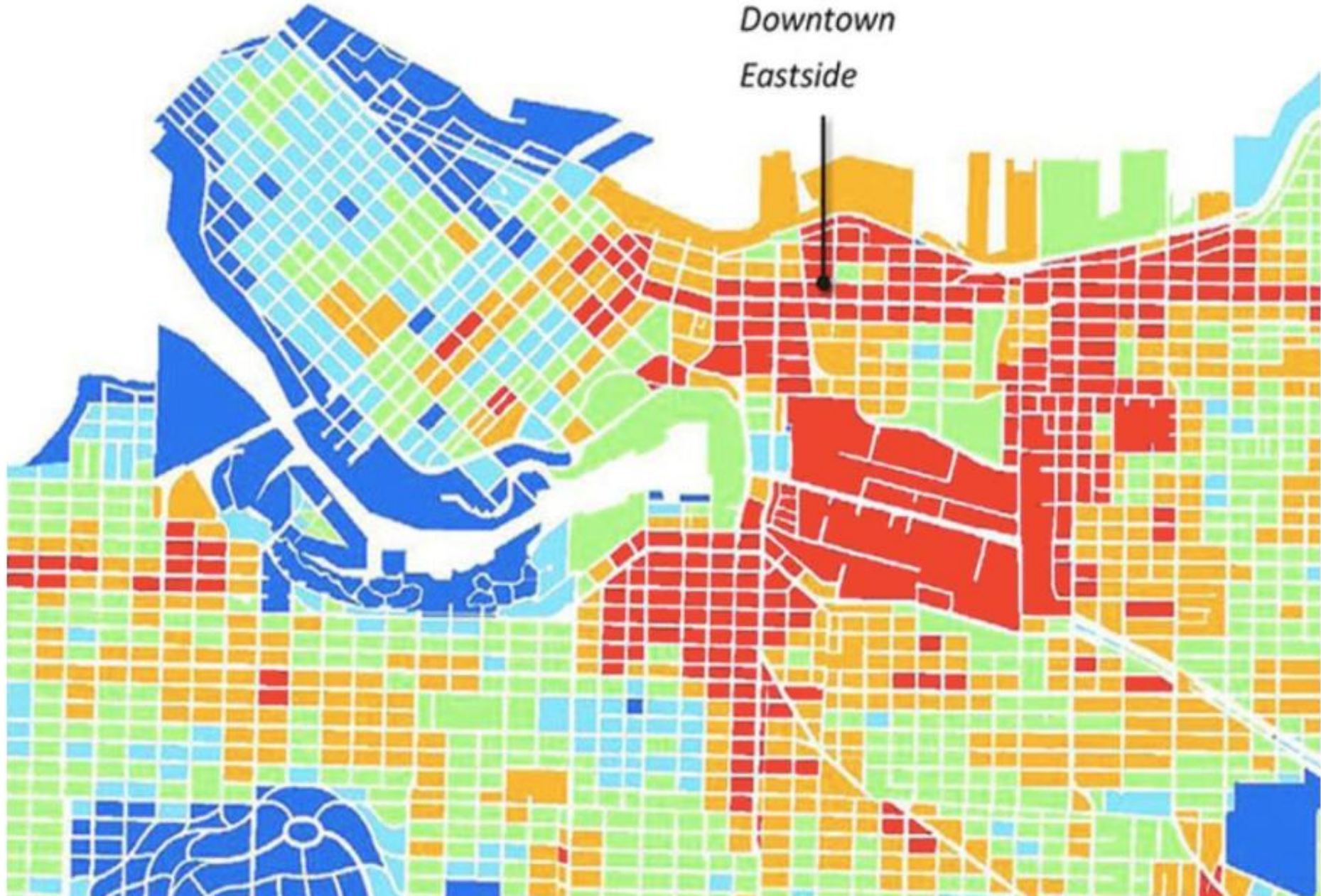
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## Analysis of Geographic and Environmental Factors and Their Association with Cutaneous Melanoma Incidence in Canada

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# Vancouver Heat Map – Vancouver Urban Forest Strategy



# Shade deprived playgrounds...



# Case Study #1 – Tennyson Childcare Centre

## Research Study: Impact of Playground Shade Structures on UV Exposure and Physical Activity among Children at a Daycare Facility

- Purpose: Improve our understanding of the impact that shade structures have on harmful UVR exposure among young children living in BC, while also considering the impacts on physical activity.
- Sunscreen and sun protective clothing for children remains critical, but *there are additional means for UVR protection that may be more far reaching but have not been systematically evaluated in BC.*
- Partnered with the City of Vancouver and Kitsilano Neighbourhood House to select Early Childcare Education Centre site and implement shade study.

# Methods

## **Study site**

- Early Childcare Centre (2nd floor location with high SW sun exposure and limited shade)

## **Study participants**

- 21 children aged 3-5 years attending the full day daycare program. Informed consent from parents; approval from REB

## **Exposure/Intervention**

- 3 custom shade sails were installed by Shade Sails Canada (2 sails near climbing structure; 1 sail over a gathering space)

## **Outcome**

- UV exposure measured via UVB dosimeters & MVPA measured via accelerometers
- Data collected over 4 days (2 days with shade sails, 2 days without shade sails) during spring, summer & fall seasons

## **Statistical analysis**

- Separate generalized linear regression models were used to examine the impact of shade structure installation on SED and MVPA.

# Shade Intervention



Photos: Tennyson “the Collective” Childcare Centre

# Results

**Table 2. Overall effects of shade installation on standard erythema dose (SED) and minutes of moderate to vigorous physical activity (MVPA)**

<b>Shade Yes (Ref No)</b>	<b>Estimate (95% CI)*</b>	<b>P-value</b>
<b>Standard erythema dose</b>	0.5 (0.4, 0.7)	<0.0001
<b>Minutes of moderate to vigorous physical activity</b>	0.8 (0.6, 0.9)	0.007

\*Adjusted for season, sex, age, and playtime duration

# Discussion

- Shade sails significantly reduced harmful UVR exposures.
- Without the shade sails, SEDs of up to 2.5 were observed. With shade sails, the maximum SED observed was 0.8.
- Shade sails were associated with lower levels of physical activity during the warmest and coolest seasons, but higher levels during summer period.
- Future research should focus on measurements of ambient temperatures; thermal comfort; observation of play behaviours; and physical activity impacts on older age children.

# Case Study #2: UBC PRO-ECO Study

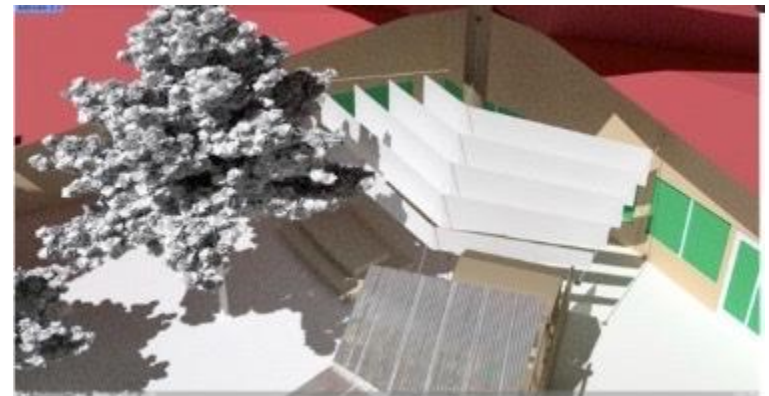
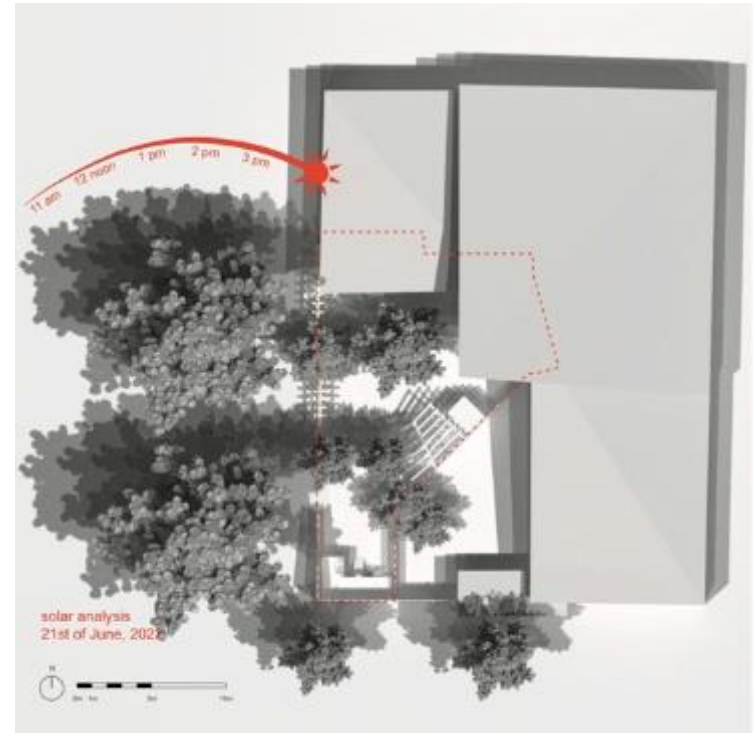


- The PRoMoting Early Childhood Outside (PRO-ECO) is a pilot study that develops, implements and evaluates a comprehensive study to increase time spent by children in quality outdoor play in ELCC centres. The PRO-ECO study integrates four main pieces: 1) **Modifying outdoor play spaces**; 2) Early childhood educator training and mentorship; 3) Parent and caregiver engagement; and 4) Updating policies and procedures.
- BC Cancer partnership on dappled light study within PRO-ECO with UBC School of Architecture & Landscape Architect students involving: shade audits, shade design, prototyping and install of innovative shade solutions.

# Dappled Light Study

## SALA Student Solar Analysis of the Sites:

- Analyze modeled sun patterns in the main playing areas of the play space at the following time points: 11am, 12pm, 1pm, 2pm & 3pm on June 21.
- If areas have 4-5 consecutive times in the sun, then site needs shade.
- If areas have 3-4 consecutive times in the sun, then answer these questions:
  - Is the site south/west exposed?
  - Is there limited/no shade on the site?
  - Are the ground surfaces made of sand, asphalt, concrete and/or water?
  - Are nearby building walls white or light coloured?
- If answered yes to 3+ questions, then site needs shade intervention.



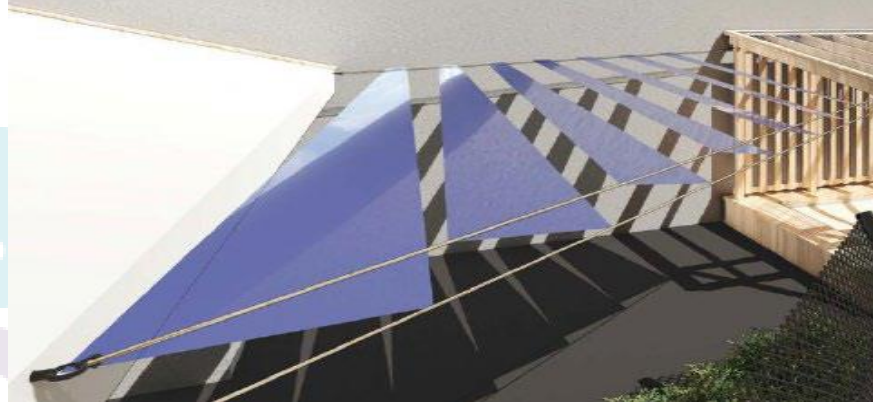
Source: School of Architecture & Landscape Architecture

# Natural Shade Interventions



Source: Play Outside Lab & School of Architecture & Landscape Architecture

# Built Shade Interventions - Shade Sails



Source: Play Outside Lab & School of Architecture & Landscape Architecture

# Creative Shade Interventions!



Source: Play Outside BC and School of Architecture & Landscape Architecture

# Data Collection – TOPO Play Behaviour Data

## TOPO Play Behaviour (Play vs Non-Play)

PRE-INTERVENTION SITE #1

Loebach, J., & Cox, A. (2020). Tool for Observing Play Outdoors (TOPO): A New Typology for Capturing Children's Play Behaviours in Outdoor Environments. *International journal of environmental research and public health*, 17(15), 5611. <https://doi.org/10.3390/ijerph17155611>



Source: Play Outside UBC

# Knowledge Translation



**BC  
CANCER**  
Provincial Health Services Authority

## Outdoor Shade Audit Tool Activity

Convert a PDF to Microsoft Word, Excel, PowerPoint, or Google Docs. [more](#)

A shade audit is an objective process for measuring shade at a childcare centre to determine if changes are needed. The purpose of a shade audit is to help identify sources of shade, where and when shade is available, and how outdoor areas are used.

**How do I conduct a shade audit?**

At lunch on a sunny day, go outside and walk around your grounds paying attention to areas that are shaded from the sun. Examples include under trees, playground structures, next to buildings or other shade structures such as awnings or sails. This is a fun activity to involve your children!

**How do I measure the amount of shade at my childcare centre?**

## Guidelines

### Childcare Design Guidelines

*Approved by Council February 4, 1993*

*Last amended December 10, 2019, September 15, 2020 and January 19, 2021*

Source: City of Vancouver Childcare Design Guidelines

# Thank-you!

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