

Applying Behavioural Insights to Increase Immunization Uptake

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Roadmap:

1. **Background: Vaccine Hesitancy & Childhood Immunizations**
2. **Methods**
3. **Results**
4. **Discussion**

Vaccine Hesitancy: the delay or refusal of vaccination despite vaccine access

Complacency

- Perceived risk of vaccine-preventable diseases is low
- Passive non-vaccinators

Lack of Convenience

- Issues of accessibility, affordability, availability
- Intention-behavior gap

Utility Calculations

- Personal evaluations of risk
- Free-riding, fence-sitting

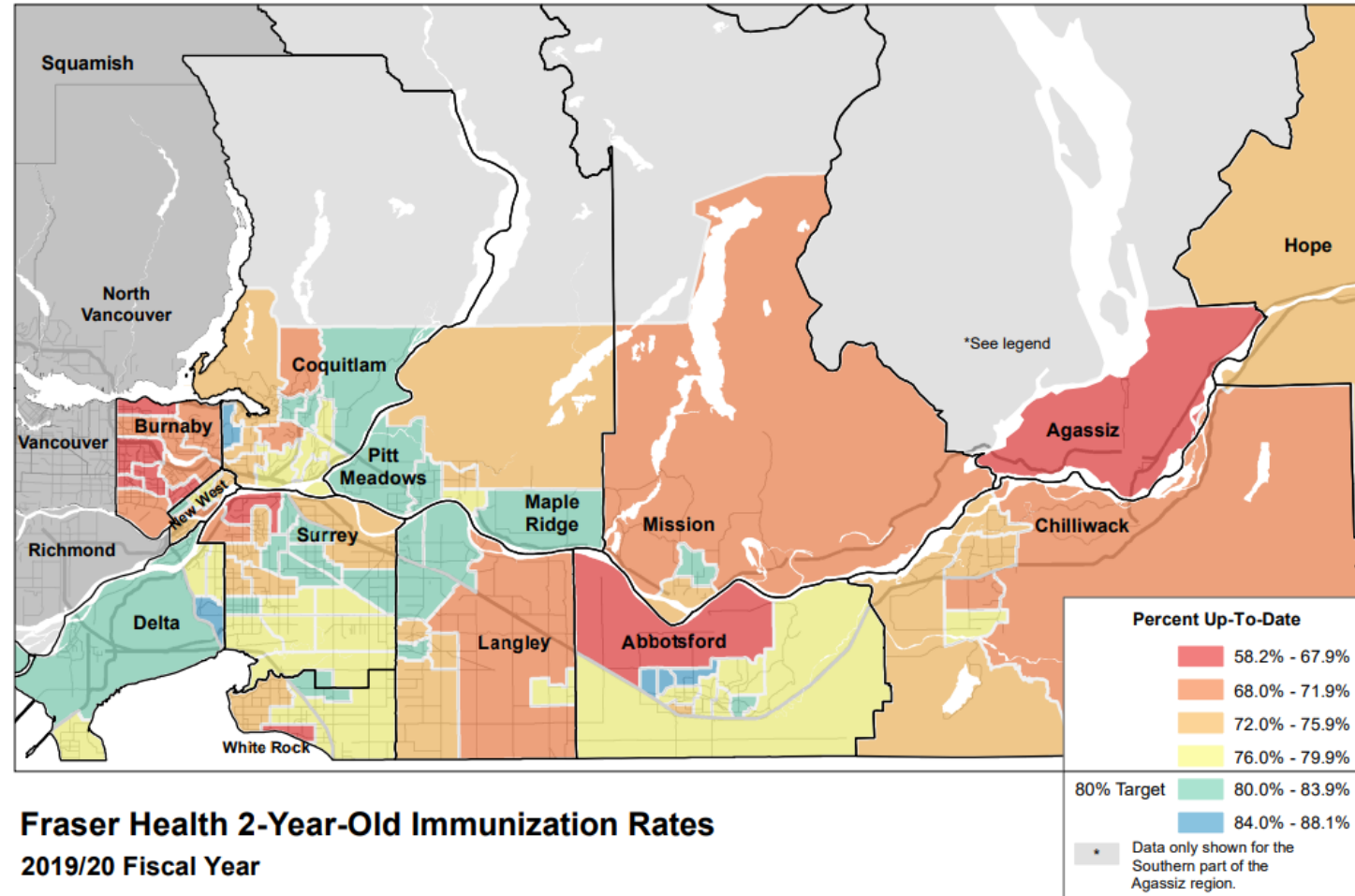
Lack of Confidence

- Strong attitudes towards vaccination
- Effectiveness, safety, trust in authority/health care providers



Childhood Immunizations

- Vaccine coverage rates in the Fraser Health region average about 71-74% for up-to-date (UTD) immunizations at two years of age = below targets
- Procrastination, forgetfulness and logistical barriers are common issues for parents getting their child immunized
- New strategies are needed to increase immunization coverage



Data Sources: Panorama for 2-year-old immunizations
Geographic unit is HELP neighborhoods from UBC
Projection: UTM Zone 10N
Prepared by: Population Health Observatory,
Fraser Health Authority, Jan 2021

Methods

Parents of children turning 17 months of age from January to April 2022, were mailed 1 of 4 reminder postcards designed with behavioural insights to remind them their child was due for immunizations

- 1) Control
- 2) Deadline
- 3) Checklist
- 4) Deadline-Checklist



Postcard V1: Control



YOUR CHILD'S IMMUNIZATIONS ARE DUE
Call to book an appointment today!

Give your child the best protection against vaccine preventable diseases.

Make sure they get immunized on time.



fraserhealth
Better health. Best in health care.

TO BOOK YOUR CHILD'S APPOINTMENT:

- Contact your local health unit
- Contact your health care provider

Place Child's info here



For more information about immunization or to find a health unit near you visit:

www.immunizebc.ca



Postcard V2: Deadline

**YOUR CHILD'S
IMMUNIZATIONS
ARE DUE BEFORE
THEY TURN TWO!**

Book an appointment today!

Give your child the best protection against diseases that can be prevented by vaccines, **get them immunized on time.**



**GET YOUR CHILD
IMMUNIZED ON TIME:**

- Contact your doctor or nurse
- Or call Fraser Health at 604-476-7087

Place Child's info here



For more information visit: www.immunizebc.ca



Postcard V3: Checklist



STEPS TO GET YOUR CHILD IMMUNIZED:

- 1. Contact your doctor or nurse, or call Fraser Health at 604-476-7087
- 2. Book an appointment for _____

Place Child's info here
- 3. Find your child's immunization passport (includes helpful tips!)
- 4. Bring the passport to your appointment
at _____ on _____
TIME DATE
at _____
LOCATION OF CLINIC
- 5. Submit your child's record at www.fraserhealth.ca/immunizationform

For more information visit www.immunizebc.ca



Methods

Outcomes

1. If a child received any immunization
2. If a child received the booster shot and is UTD
3. If a child is UTD minus booster

*by 21 months of age



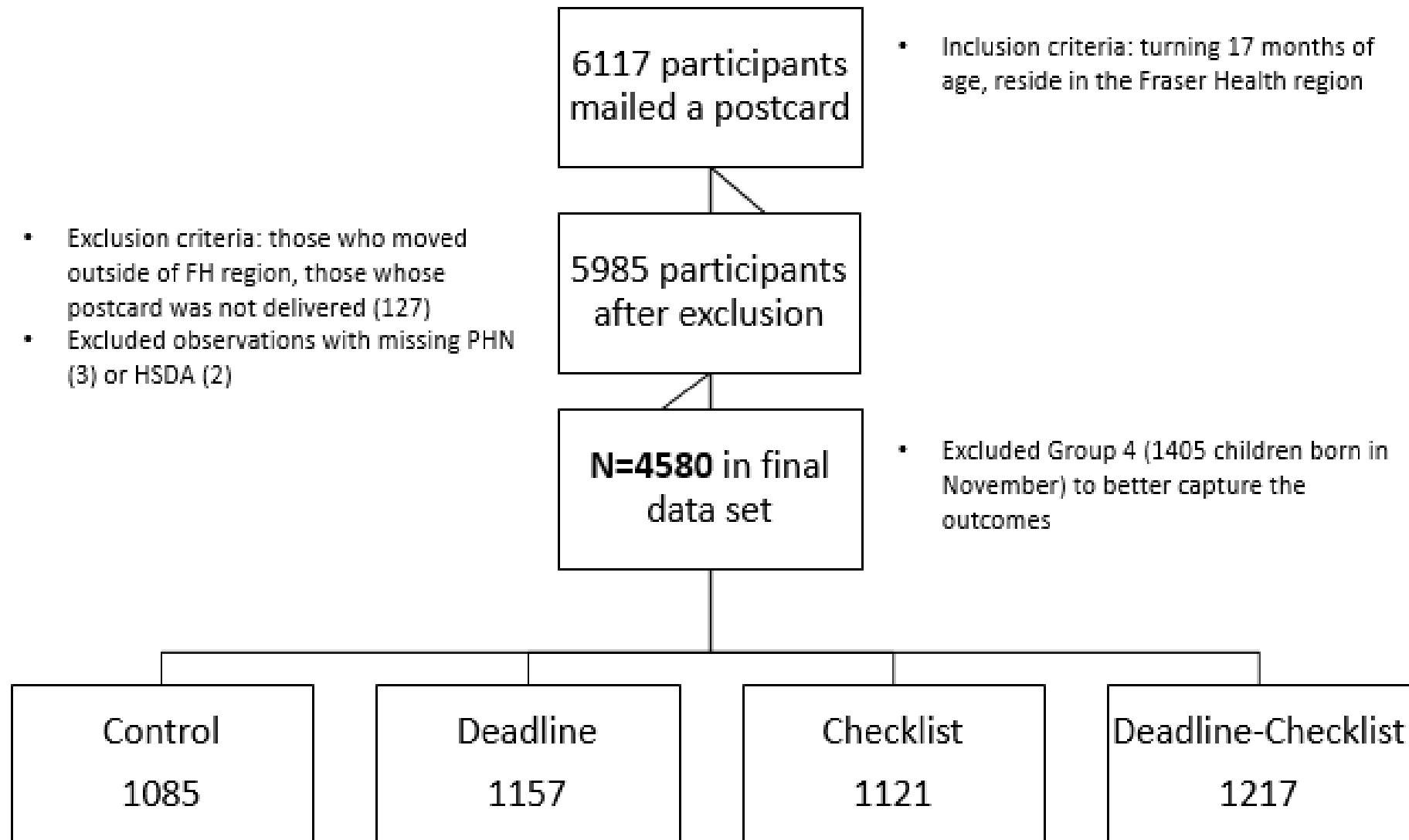
Methods: Logistic regression

Predictor Variables

1. Postcard
 - Control, Deadline, Checklist, Deadline-checklist
2. Health Service Delivery Area (HSDA)
 - Fraser North, Fraser East, Fraser South
3. Sex
 - Female, Male
4. Observation Window (in days)



Methods



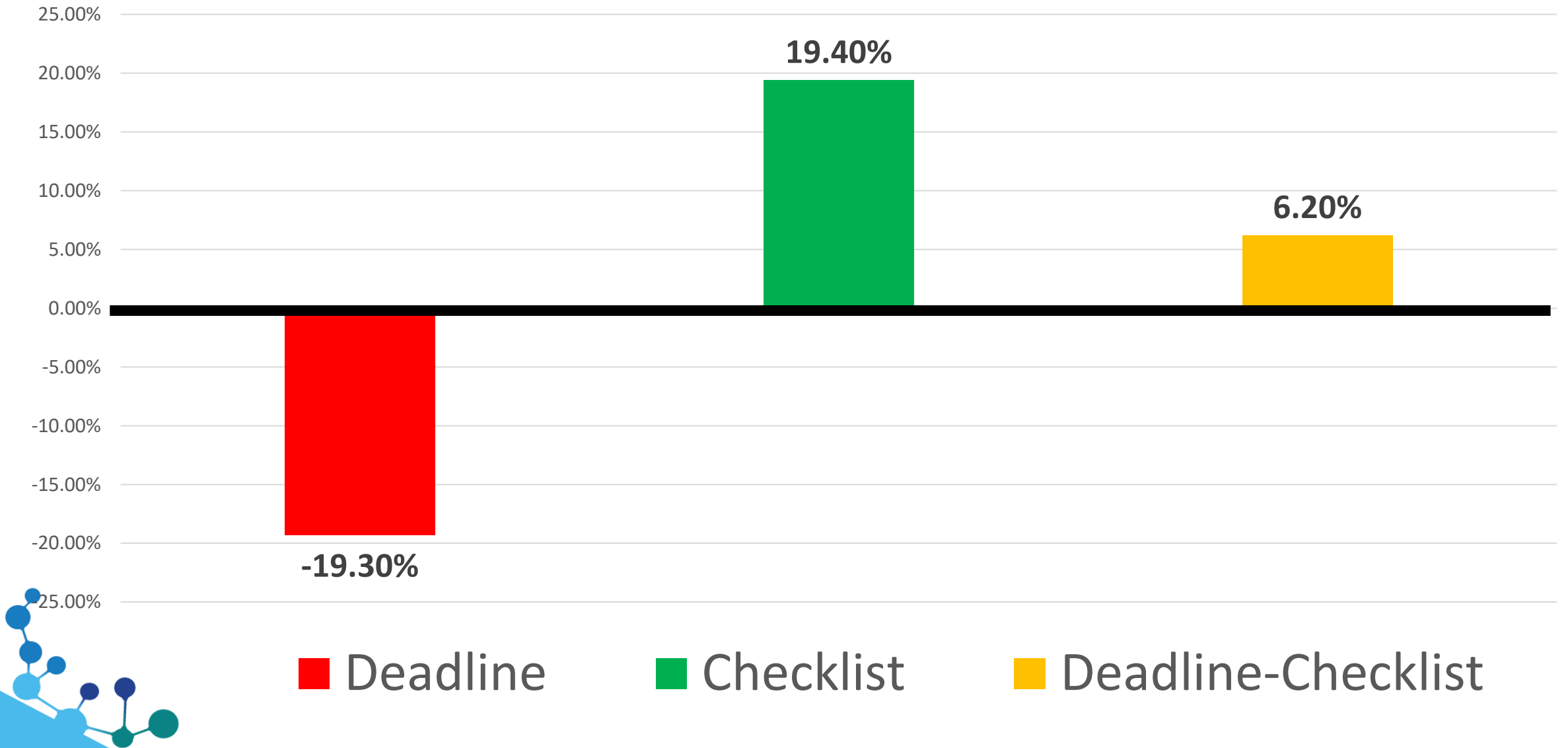
Results: O1. If a child received any immunization

Table 1. Logistic regression with **Any Immunization** as the response variable

Variable	Odds Ratio (OR)	P-value ($\alpha=0.05$)	Confidence Interval
Deadline	0.807	0.0172	(0.677, 0.963)
Checklist	1.194	0.0433	(1.005, 1.418)
Deadline-checklist	1.062	0.4881	(0.895, 1.261)
Fraser North	1.115	0.1028	(0.978, 1.272)
Fraser East	0.488	<.0001	(0.409, 0.581)
Sex	0.971	0.6227	(0.862, 1.093)
Observation Window	1.004	0.3416	(0.996, 1.012)



Odds of Receiving Any Immunization between 18-21 mos.



Results: O2. If the child received a booster and is UTD

Table 2. Logistic regression with **UTD (including booster)** as the response variable

Variable	Odds Ratio (OR)	P-value ($\alpha=0.05$)	Confidence Interval
Deadline	0.897	0.2349	(0.751, 1.073)
Checklist	1.175	0.0746	(0.984, 1.404)
Deadline-checklist	1.032	0.7232	(0.867, 1.228)
Fraser North	1.062	0.3781	(0.929, 1.214)
Fraser East	0.509	<.0001	(0.424, 0.611)
Sex	0.946	0.3705	(0.837, 1.069)
Observation Window	1.024	<.0001	(1.012, 1.037)




Results: O3. If a child is UTD minus booster

Table 3. Logistic regression with **UTD minus booster** as the response variable

Variable	Odds Ratio (OR)	P-value ($\alpha=0.05$)	Confidence Interval
Deadline	0.902	0.256	(0.756, 1.077)
Checklist	1.182	0.0639	(0.99, 1.41)
Deadline-checklist	1.05	0.5817	(0.883, 1.248)
Fraser North	1.025	0.7139	(0.897, 1.172)
Fraser East	0.52	<.0001	(0.434, 0.623)
Sex	0.96	0.5061	(0.85, 1.083)
Observation Window	1.023	0.0002	(1.011, 1.035)



Key Findings



The additional behavioral insights applied to the postcards had a significant effect on immunization uptake, but did not impact UTD outcomes

The **deadline** postcard **decreases** the odds of a child being immunized by 21 months of age

The **checklist** postcard **increases** the odds of a child being immunized by 21 months of age

Considerations

- Could not analyze the entire sample within this timeframe
 - Excluded Cohort 4 and will revisit with later analysis
- Reliance on health care providers or families reporting immunizations done outside of public health clinics (e.g., at doctor's offices)
- COVID-19 pandemic changed landscape of immunization access/uptake
- Spring immunizations campaign (March 7th – May 17th) represented a big push to promote immunization that overlapped with these mail outs
- Differences in regional immunization strategies and operations limits generalizability to other health authority areas/provinces

Significance:

- If employed at mass scale, the effects could be substantial in increasing immunization coverage across the Fraser health region.
- Can inform simple, cost-effective next steps for postcard redesign or other communications strategies

Next Steps:

- Re-run the analysis with full sample for complete analysis
- Incorporate ecological variables known to influence childhood immunization coverage (e.g. Low-income, current immunization rates, single parent households, part-time employment status, etc.)
- Continue to refine Fraser Health communications and identify additional ways to apply behavioural insights

Thank you!

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