Summary of Phill Sexton's Thesis with a focus on application rates

- To access the full document visit: https://dash.harvard.edu/handle/1/33826971
- Salt Rate Guidelines – 5 sets
  - University of Waterloo – SICOPS
    - "Control"
    - 2 hour Bare Pavement Regain Time (BPRT)
  - Sustainable Salt Initiative (SSI)
    - Average of rates measured with tracking software.
    - Rates measured during 2015-'16 and 2016-'17 winter seasons.
  - Minnesota Pollution Control Agency
    - BRPT not specified
    - Converted from lane-mile rates for transportation sector
      - No additional consideration for different traffic type/surface use
  - NH Green Snow Pro
    - BRPT not specified
    - Based on Minnesota rates with modification that were tested at the University of New Hampshire Transfer Station
  - SIMA's salt production rate guidelines
    - BRPT not specified
    - Based on a survey from a small group of contractors ~10 years ago

Table 6. Comparative analysis table for application rates of dry NaCl.

Pavement Temp. (°F) and Trend (↑ ↓)	Conditions	CONTROL (SICOPS Study)	Dry Salt (NaCl) Application Rate in Pounds per 1000 sq. ft.			
			SSI Case Study	Minnesota Guidelines	N. Hampshire Guidelines	SIMA Guidelines
15 - 20 ↑	Cleared snow from surface	18	14	3	10	14
15 - 20 ↓	Cleared snow from surface	18	13.5	2.75	10	14
20 - 25 ↑	Cleared snow from surface	9	13.25	2.75	9.5	13
20 - 25 ↓	Cleared snow from surface	9	12.75	2.25	8.25	13
25 - 30↑	Cleared snow from surface	3	12.5	1.5	8.25	12
25 - 30 ↓	Cleared snow from surface	3	11	1.5	6.5	12
30↑	Cleared snow from surface	3	11	1.5	6.5	11
>30 ↓	Cleared snow from surface	3	10	0.75	4.5	11

- Salt use compared to guidelines:
    - SSI case study supports that current rates of salt application for parking lots and private roadways are higher than a majority of the guidelines indicate they should be.
    - The rates and frequencies of salt application rates increase when contracted LOS or perceived levels of quality for snow and ice controls are increased
        - This is led by #1) contract types that incentivize material use and frequency of application, and #2) profit potential.
            1. Level of service is the primary driver of increased salt application rates (in Virginia this is primarily driven by time and material contracts)
            2. Revenue is the secondary driver of increased salt application rates (in Virginia this is primarily driven by time and material contracts)
            3. Perceived level of quality (must see the salt and feel the crunch) is the tertiary driver of increased salt application rates
        - Liability although a contributor was not the primary driver.
            - While not the sole driver that will reduce salt application rates, liability concerns fall below the top 3 concerns, but still needs addressing to comprehensively address the issue.
- Solutions
    - Options include industry lead salt rate guidelines, seasonal variance contract models adopted by property owners, and liability reform.