

“It Depends on Where You Look”: The Unusual Presentation of Scurvy and Smallpox Among Klondike Gold Rushers as Revealed Through Qualitative Data Sources*

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Abstract

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Health in the context of frontier boomtown communities represents an underdeveloped topic of research both within the social sciences and beyond. Studies of such historic communities offer insight into the human condition in past populations. They provide valuable observations with far-reaching modern-day applications, as many of the issues faced by the Klondike Gold Rushers are similarly experienced by those residing in single-industry and resource communities experiencing fast change in the remote wilderness. These communities present a unique biosocial context for the experience of disease and disorders, as is evident in the case of both scurvy and smallpox when they erupted in the Klondike gold fields. Yet, for various reasons, these diseases remained invisible when quantitative data sources only were used. The important implications that these sicknesses held for the health status of the gold rushers would thus have been undetected had analysis focused solely upon the customary morbidity and mortality data sources, resulting in a distorted view of the human condition in the context of this celebrated event in Canadian history. Only when qualitative materials are also explored does the full picture of the health in this historic population come into focus, while also revealing

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much more about life in this particular time and place than simply what illnesses the Klondikers suffered and died from.

Introduction

While prospectors had been scouring the Canadian North for decades prior to the Klondike discovery, there had been only a handful of individuals of European descent in the Yukon Territory at any given time.¹ By September of 1896, however, Dawson City had sprung into existence on the mudflat junction between the Yukon and Klondike Rivers in Canada's frontier wilderness. Just a few short months following George Camack's famous strike on Bonanza Creek, this location had been selected as it was primly located to serve as both a transportation hub and supply centre for the surrounding gold fields. Although the 'city' was not yet recognizable as such, during Dawson's first winter, Joseph Laude (a long-time northern outfitter and founder of Dawson City) erected the first permanent building in the community - his supply warehouse - as the foundation of the townsite.² Over the winter, Laude managed to clear some of the townsite and began selling lots at the paltry rate of twenty-five dollars to the mere five-hundred gold rushers who had managed to reach Dawson City prior to the close of river navigation that fall.³

Throughout 1897, stampeeders slowly trickled into the Klondike and population growth remained modest, with the

¹ Pierre Berton, *The Klondike Fever: The Life and Death of the Last Great Gold Rush* (New York: Carroll & Graf Publishers, 1958).

² *Ibid.*

³ Charlene Porsild, *Gamblers and Dreamers: Women, Men, and Community in the Klondike*, (Vancouver: University of British Columbia Press, 1998).

majority of residents continuing to reside in the tents that they had packed in to the Territory on their backs.⁴ This was often out of necessity rather than choice, due to the unprecedented cost of living in the Klondike at this time. A hot meal, for example, might cost two and a half dollars in comparison to the rate of fifteen cents that most of the Klondikers were accustomed to paying for a comparable supper back home.⁵ By the fall of 1897, Dawson's population had reached approximately fifteen hundred, but the community remained little changed over the course of that winter, as it was not until 1898 that the gold rush began in earnest.⁶ Within a few weeks of the ice having gone out of the river that spring, Dawson City was dramatically transformed from a humble wilderness supply centre to a booming frontier metropolis. Beginning on June 9th, 1898, thousands of people arrived in Dawson on a daily basis, until the community had suddenly become the largest Canadian city both north and west of Winnipeg; dwarfing even the contemporary populations of Vancouver and Victoria.⁷ By the end the year, 4 236 people called Dawson City home, with nearly as many again maintaining a residence in the city but living on claims on the nearby creeks.⁸ Within a very short time, the character of the community had fundamentally changed from a tent-town pitched around a modest supply post to a very nearly "modern city" boasting two newspapers, two banks, five churches as well as telephone, gas

⁴ Pierre Berton, *Klondike Fever*.

⁵ Hal Guest, *A Socioeconomic History of the Klondike Gold Fields 1896-1966*, (Ottawa: Parks Canada, 1985); Hal Guest, *City of Gold: Dawson, Yukon Territory, 1896-1918*. (Unpublished Doctoral Dissertation: University of Manitoba, Winnipeg, 1982).

⁶ Sessional Papers of the Dominion of Canada, 1898 #15, 307.

⁷ Pierre Berton, *Klondike Fever*.

⁸ Sessional Papers of the Dominion of Canada, 1899 #15, 21.

and electricity service. Any luxury item that could be dreamt of on the outside could be had in Dawson City, provided one's coffers ran deep enough.⁹ Town lots could then fetch a price of up to forty-thousand dollars, while renting a single room on the outskirts of the settlement cost four hundred dollars a month, a fee far beyond the means of individual miners and laborers who earned a wage of one-dollar an hour, which was, nevertheless, a very comfortable salary by any other standard.¹⁰

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A second wave of stampeeders began flowing into the Klondike in the spring of 1899, with population estimates reaching 4 445 in Dawson City proper that year.¹¹ In 1900, Dawson's population reached 5 404 individuals, and as increasing numbers of families joined husbands and fathers in the Klondike, Dawson City's population swelled to 6 695 men, women and children in 1901, climaxing at approximately 7 000 individuals at the height of its boom period in 1902.¹² Up until that time Dawson City had developed at an unbridled boomtown pace, however the population sharply declined as new discoveries of gold were made in Alaskan territory and increasingly more machinery was brought in to the Yukon to replace the work of individual miners and their partners.¹³ Dredges became the primary means of extracting gold from the

⁹ Sessional Papers of the Dominion of Canada, 1899 #15, 73; Pierre Berton, *Klondike Fever*; Hal Guest, *City of Gold*.

¹⁰ Pierre Berton, *Klondike Fever*.

¹¹ Sessional Papers of the Dominion of Canada, 1900 #15, 54.

¹² Sessional Papers of the Dominion of Canada, 1901 #15, 44; Sessional Papers of the Dominion of Canada, 1903 #15, 27; Charlene Porsild, *Gamblers and Dreamers*, 64.

¹³ Hal Guest, *City of Gold*.

creeks after 1904, ending the era of Klondike placer mining.¹⁴

Background and Methodology

While the topic of health in historic frontier populations has lasting relevance to modern single industry and rural resource communities, the body of literature pertaining specifically to this subject remains scant.¹⁵ When the topic is focused upon health in Northern mining communities, what little literature does exist is almost entirely limited to studies pertaining to boomtowns on Alaskan soil, while research pertaining to Canadian frontier communities has concentrated almost exclusively upon the health consequences of contact for Native populations.¹⁶ This is certainly an important area of inquiry and the implication is that historical research pertaining to the 'last great gold rush' has provided a rich repository of data pertaining to the course of events and individual experiences of

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¹⁴ *Ibid.*

¹⁵ For noteworthy contributions to this small body of literature, see: David Courtwright, "Disease, Death and Disorder on the American Frontier", *The Journal of the History of Medicine and Allied Sciences*, volume 46, No. 4, 1991, p. 457-492; David Dary, *Frontier Medicine: From the Atlantic to the Pacific 1492-1941* (New York: Vintage Books, 2009); Peter Harstad, "Sickness and Disease on the Wisconsin Frontier: Smallpox and Other Diseases," *Wisconsin Magazine of History*, volume 43, No. 4, 1960, p. 253-263; Anton Sohn, *A Saw, Pocket Instruments, and Two Ounces of Whiskey: Frontier Military Medicine in the Great Basin* (Spokane: Arthur H. Clarke, 1998).

¹⁶ See, for example: Robert Fortune, *Chills and Fever: Health and Disease in the Early History of Alaska*, (Fairbanks: University of Alaska Press, 1992); John Marchand, "Tribal Epidemics in the Yukon" *Journal of the American Medical Association*, volume 123, No. 16, p. 1019-1920; Bruce Willis, *The Environmental Effects of the Yukon Gold Rush 1896-1906: Alterations of Land, Destruction of Wildlife, and Disease* (Unpublished Master's Thesis, University of Western Ontario, London, 1997); Robert Wolfe, "Alaska's Great Sickness, 1900: An Epidemic of Measles and Influenza in a Virgin Soil Population," *Proceedings of the American Philosophical Society*, volume 126, No. 2, p. 91-121.

the Klondike miners. However, the question of health among those who lived and labored in the frontier boomtown of Dawson City has remained almost entirely unexplored.¹⁷

While Guest (1982) dedicated one chapter of his unpublished doctoral dissertation to “Public Health and Hospitals”, his historical discussion lacked any analysis (statistical or otherwise) of morbidity or mortality trends within the community.¹⁸ Lux on the other hand did enter into some statistical analysis of causes of death but her research was based on the ‘Alphabetical Death Register for Dawson City’, which was by her own admission largely incomplete.¹⁹ The present study, and the larger project from which it originated, therefore represent the first anthropological perspective to be offered on the health of the Klondike gold rushers themselves. It is also the only study to explore the topic of health in this Canadian frontier community through statistical analysis of two quantitative data sources. These are the Yukon Territory Death Register and the Patient Register for Saint Mary’s Hospital that have only recently become available for consultation for research purposes.

In order to address questions pertaining to disease processes and illness experiences in the parent study, two discrete databases were constructed for statistical analyses of

¹⁷ Francis Backhouse, *Children of the Klondike*. (Vancouver: Whitecap Books, 2010); Francis Backhouse, *Women of the Klondike*. (Vancouver: Whitecap Books, 1995); Pierre Berton, *Klondike Fever*; Julie Cruikshank, “Images of Society in Klondike Gold Rush Narratives: Skookum Jim and the Discovery of Gold,” *Ethnohistory*, volume 39, No.1, 1992, p. 20-41; Jennifer Duncan, *Frontier Spirit: The Brave Women of the Klondike* (Toronto: Doubleday Canada, 2004); Charlene Porsild, *Gamblers and Dreamers*; Charlene Porsild, *Culture, Class and Community: New Perspectives on the Klondike Gold Rush 1896-1905*. (Unpublished Master’s Thesis: Carleton University, Ottawa, 1995).

¹⁸ Hal Guest, *City of Gold*.

¹⁹ M. Lux, “Disease and the Growth of Dawson City: The Seamy Underside of a Legend,” *The Northern Review*, volume 3/4, p 96-117.

morbidity and mortality. The first drew data from the Death Register for the Yukon Territory, while the second was constructed from the Patient Register for Saint Mary's Hospital, which operated in Dawson City during the period of study. Qualitative materials were also consulted in the form of historic archival documents and newspapers for the initial purpose of contextualizing statistical analyses within the cultural and historical milieu of the community. My book offers a fuller discussion of the research methodology and findings of the initial study.²⁰

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Of relevance here, however, is that the aforementioned qualitative materials included first-hand accounts of the gold rushers in the form of diaries, personal letters and published manuscripts, in addition to all available copies of the *Dawson Daily News* as well as the correspondence of local police, health and government officials. In reviewing these documents, incongruences became apparent early on in the research process, in that despite numerous references made in these qualitative sources pertaining not only to the presence, but also to the high prevalence of both scurvy and smallpox in the Klondike, neither of these ailments were accordingly represented in the primary (quantitative) data sources. Thus the impact of these ailments upon on the health and wellbeing of the gold rush community would have remained undetected had statistical analyses of the Death and Patient Registers been relied upon as the sole primary sources of data for this study.

²⁰ Megan Highet, *Rushing to the Grave: Death and Disease During the Klondike Gold Rush, 1898-1904* (Germany: VDM Verlag, 2009).

Locating Scurvy in the Klondike

Scurvy is a nutritional disease that arises due to vitamin C deficiency. Typically, a poor and unvaried diet lacking fresh fruit and vegetables that are naturally rich in this essential nutrient are responsible for the disease. It can also arise due to poor cooking practices which destroy the nutritive value of foods that would otherwise satisfy this dietary requirement.²¹ Historically, scurvy has tended to occur in contexts where access to adequate foodstuffs is restricted (such as among sailors at sea for extended periods), yet other socioeconomic factors have been noted for their role in contributing to outbreaks of the disease most notably for the present purpose, among ill-provisioned gold rushers.²²

The symptomatology of scurvy progresses slowly as bodily stores are incrementally depleted, with lethargy often being the only indication of the disorder in its early stages. Thus, scurvy may masquerade as overwork, mild sickness or malaise, and easily go undiagnosed for extended periods.²³ Scurvy remains relatively latent for approximately nineteen weeks into an insufficient diet, at which point the first physiological signs begin to manifest as the skin roughens in both texture and appearance.²⁴ After approximately twenty-three weeks, minor wounds no longer heal, however it is not until around the thirty-

²¹ Roger French, 'Scurvy', in Kenneth Kiple (ed), *The Cambridge World History of Human Disease* (New York: Cambridge University Press, 1993), pp. 1000-1005.

²² Roger French, *Scurvy*; John Baur, "The Health Factor in the Gold Rush Era," *The Pacific Historical Review*, volume 18, No. 1, 1949, p. 97-108.

²³ Roger French, *Scurvy*.

²⁴ *Ibid.*

week mark that the telltale sign of scurvy - soft, swollen gums that take on a purple discoloration - becomes apparent.²⁵ Yet even at this late stage of the disease full-recovery is easily affected through the administration of large doses of Vitamin C.²⁶ If the disease is permitted to progress unchecked however, the eventual outcome is inevitably fatal, following a prolonged period of excruciating and progressive deterioration.

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Given the nature of the data available regarding the experience of scurvy during the gold rush, it is not possible to determine the precise prevalence of the disorder among the Klondikers. However, qualitative data does strongly suggest that the incidence was both high and widespread. Support for this comes from the plethora of first-hand accounts of scurvy as witnessed and experienced by the gold rushers. Vivid descriptions of both the symptoms and suffering are preserved in the letters and diaries of numerous stampeeders, as well as in the accounts of physicians and nurses stationed in Dawson. An extremely high prevalence is further hinted at by articles published in the *Dawson Daily News*, while reports of the North West Mounted Police cite over 100 cases as having been known to the Police Surgeon during December of 1898 alone.²⁷

Although local officials made abundance of reference to scurvy having been rampant in the Klondike, particularly during the early years of the rush, there were, nevertheless, only ten such deaths reported in the Death Register for the Yukon Territory, while only four admissions were made to Saint Mary's

²⁵ *Ibid.*

²⁶ *Ibid.*

²⁷ Yukon Archives, *The Dawson Daily News*, 1896-1904; Sessional Papers of the Dominion of Canada, #15, 1899.

Hospital for this ailment throughout the period of study. The discrepancy between the qualitative and quantitative evidence might be explained by the fact that scurvy was easily treated—even in the rustic gold fields—in all but the most advanced stages through simple dietary supplementation with the individual having a very good chance of making a full recovery.²⁸ Further, the Patient Register for Saint Mary's Hospital dates back only as far as 1900, whereas scurvy reached its peak prevalence during the early years of the gold rush, with greatest incidence occurring prior to the turn of the century when food prices stabilized and fresh groceries became more widely available.²⁹ Finally, the fact that home remedies were evidentially preferred over the high cost of securing professional medical care is likely responsible for the few cases actually admitted to Saint Mary's Hospital during this time. This may be interpreted as evidence for the care-seeking behavior of the gold rushers who were unwilling to spare either the time or expense of spending precious time away from their claim in order to procure medical treatment for a disease that was perceived to be fully curable at 'home'.³⁰ Support for this interpretation can be gleaned from the recollection of one unfortunate Klondiker:

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Luckily, I was not alone. Other boys in the camp came to my assistance...when my body became so frightful in appearance, and the pain all but killed me, I had to yield...I permitted the boys to give me a little of the sourdough's medicine. They went to the woods, cut

²⁸ Margaret Archibald, "Grubstake to Grocery Store: Supplying the Klondike, 1897-1907", in *Canadian Historic Sites; Occasional Papers in Archaeology and History* No. 26 (Ottawa: Parks Canada), pp. 5-149.

²⁹ Megan Highet, *Rushing to the Grave*.

³⁰ Roger French, *Scurvy*.

spruce and cottonwood twigs and made me teas...The effect was marvelous. A short treatment and my wasting tissue took on new life. The disease dissipated so in a few weeks [sic] that I was able to hobble about the creek with two sticks.³¹

Finally, the practice of doctors making private house calls to the miners' cabins precluded such cases from being recorded in the primary morbidity data (Saint Mary's Hospital Patient Register). Taken together, all of these factors combine to give the false impression in quantitative sources that scurvy was not in fact rife in the Klondike and that it posed a far less significant threat to the health status of the gold rushers than was actually the case.

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The Significance of Scurvy in the Klondike

An association among single men living on their own and the incidence of scurvy has been documented elsewhere, and through a review of the qualitative data, scurvy has in fact been revealed as a common ailment of the unprepared Klondiker who neglected their diet due to their insatiable appetite for gold.³² The fact that the primarily male miners "wolfed down their food, half cooked and cold" because they were unwilling to pry themselves away from their quest for fortune any longer than was deemed absolutely necessary has been lamented both by

³¹ Yukon Archives, *The Dawson Daily News*, December 3, 1902.

³² Roger French, *Scurvy*; Margaret Archibald, *Grubstake to Grocery Store*.

scholars and the North West Mounted Police who commented on the situation as they saw it and deplored such behavior:³³

[the stampeeters are] indolent and careless, only eating those things which are most easily cooked or prepared. During the busy time...they work hard and for long hours, sparing little time for eating and much less for cooking. This manner of living is quite common amongst beginners and soon...leads to scurvy.³⁴

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A shared lust for adventure and the lure of fortune drove men to the Klondike. While some may have ultimately found what they were looking for, it rarely came without sacrifice.³⁵ Such was the experience of one young man who developed scurvy while searching for gold on Cheechako Hill in the immediate vicinity of the Klondike food markets:

[T]he discoverer worked like a man possessed. He was already suffering from scurvy brought on by meager rations and overstrain, but he had no time to consider treatment...On he worked, his legs turning black and scabrous, until he had twenty thousand in gold. Then, almost dead from scurvy, his claim still unsurveyed and unregistered, he headed downhill for Grand Forks to get some raw potatoes to arrest his disease.³⁶

The prioritization of their lust for gold above their own health began long before inexperienced stampeeters even reached the

³³ Pierre Berton, *Klondike Fever*, p. 196.

³⁴ Sessional Papers of the Dominion of Canada #15, 1896, p. 18.

³⁵ Hal Guest, *A Socioeconomic History of the Klondike Gold Fields*.

³⁶ Pierre Berton, *Klondike Fever*, p. 195.

Klondike. In their regrettable haste to be among the first to reach the gold fields many men had “risk[ed] all in the hopes of making a fortune quickly”, and inadvertently set themselves up for their own demise by skimping on the size and quality of their supply outfits—opting for more compact foodstuffs which were lighter and easier to pack.³⁷ This oversight led to meager rations for the early Klondikers and had obvious consequences when scurvy appeared in their midst:

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My stock of grub became so low and so deficient in variety that the scurvy seized on me. If ever a man was in a frightful condition I was. My body and my limbs turned black, my hair fell out and I could have pulled any of my teeth from my mouth with my fingers with scarcely any effort. Sores covered my body like Job in his great affliction. Pain filled and racked me from head to foot.³⁸

Experienced prospectors knew enough to “value health more than gold...[and to] spare no expense in procuring the best and most varied outfit of food that [could] be obtained”.³⁹ The greenhorns who begrudged their outfits assuming that they could simply purchase whatever they required upon reaching the gold fields soon realized the folly of their gamble, since groceries in the Klondike were often prohibitively expensive as well as seasonally scarce.⁴⁰ Thus scurvy was hunger’s companion during the early years of the gold rush, as few could manage to supplement their staple diet of beans, bacon and flour and had to

³⁷ Sessional Papers of the Dominion of Canada #15, 1898, p. 24.

³⁸ Yukon Archives, *The Dawson Daily News*, December 3, 1902.

³⁹ Sessional Papers of the Dominion of Canada #15, 1896, p. 18.

⁴⁰ Margaret Archibald, *Grubstake to Grocery Store*; Megan Highet, *Rushing to the Grave*.

make due as best they could until food-market conditions improved:⁴¹

The food we had that winter was a fright...I had a poor lot of flour, and some musty beans. The provision had run short and I had attempted to get through mostly on this simple fare. Fruit and other enemies of scurvy were unknown. The flour was part of several hundred sacks which had been brought up the Yukon in a steamer which sprang a leak. It was full of lumps, and not wholesome.⁴²

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Thus, while the presence of this disease in a settled community diverges from its traditional association among sailors and soldiers, given a review of the circumstances, it is not surprising that scurvy was able to establish a foothold in the Klondike during the gold rushers' first few seasons in the North. Yet, lack of foresight in selecting a suitable grubstake need not have condemned the Klondikers to suffer the ails of scurvy, as there was in fact an abundance of wild berries near the gold fields. This fact was noted by the North West Mounted Police who reported that it was not that people were unaware of their presence, or their nutritional value, but that they were simply "too busy mining to [bother] to pick them".⁴³

Beyond the obvious threat to health inherent in the detection of scurvy among the Klondikers, a greater implication is that the presence of this disorder meant the gold rushers' diets were deficient in at least one essential nutrient (vitamin C). Under these circumstances, this was likely not the only aspect of

⁴¹ Pierre Berton, *Klondike Fever*, p. 198.

⁴² Yukon Archives, *The Dawson Daily News*, December 3, 1902.

⁴³ Sessional Papers of the Dominion of Canada, #15, 1896, p. 18.

the miner's nutritional status that was inadequate. This observation is significant, as a reciprocal relationship is known to exist between an individual's nutritional status and their resistance to infectious diseases. Malnourished individuals are less resilient to infection and at a disadvantage when combating illness. They are more likely to die from their ailment than their adequately nourished counterparts are.⁴⁴ Thus, the impact of the numerous infectious diseases that found a foothold in the Yukon during this period, accounting for 38.5 per cent of all mortality noted in the Death Register for the Yukon Territory, must certainly have been intensified by the fact that many Klondikers were evidentially at a nutritional disadvantage.

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The implication of this inference holds further significance in consideration of the emerging field of syndemics, which explores the adverse interactive relationship between two or more co-occurring epidemics.⁴⁵ The concept of syndemics has the potential to fundamentally change the way that we understand health crises from a synergistic perspective, as one of the main premises of this theory holds that socioeconomic factors (such as those surrounding the outbreak of scurvy in the Klondike) involved in epidemics can be equally as important as the underlying biological interactions. This, in turn, holds significant implications for frontier communities which often struggle with a variety of epidemic diseases during boom

⁴⁴ Bernard Harris, "Public Health, Nutrition, and the Decline of Mortality: The McKeown Thesis Revisited," *Social History of Medicine*, volume 17, No. 3, 2004, p. 167-181.

⁴⁵ Merrill Singer & Scott Clair, "Syndemics and Public Health: Reconceptualizing Disease in Bio-Social Context," *Medical Anthropology Quarterly*, Volume 17, No. 4, 2003, p.423-441; Merrill Singer, "Pathogen-pathogen interaction: A syndemic model of complex biosocial processes in disease", *Virulence*, Volume 1, No. 1, p. 10-18.

periods. This is, however a complex topic extending far beyond the scope of the present research goals, and as such, it remains one that must be explored as the larger project is further developed. Meanwhile, the significance of biosocial aspects of disease is immediately evident when one considers the fact that it was the constant flow of people into the Yukon (which maintained a constant population of susceptibles) in addition to the unique characteristics of the gold rush community that accommodated the importation and dissemination of the infectious diseases that posed such a significant threat to the health of the Klondikers. The context of the Klondike also sometimes contributed to unusual manifestations of disease. Such was the case with smallpox when it erupted in the gold fields.

Locating Smallpox in the Klondike

Typically an ailment of childhood, smallpox is an acute infectious disease caused by the *Variola* virus, which is usually transmitted through expulsion by an infected individual and the subsequent inhalation of airborne particles by vulnerable persons.⁴⁶ As it has no reservoir outside of the human body, smallpox exists only as an active infection that disappears from a population once it has run its course through all whom come into contact with pathogen.⁴⁷ Smallpox has thus existed as an endemic disease in populations large enough to supply a

⁴⁶ Alfred Crosby, 'Smallpox', in Kenneth Kipple (ed), *The Cambridge World History of Human Disease* (New York: Cambridge University Press, 1993), pp. 1008-1013.

⁴⁷ *Ibid.*

constant population of vulnerable newborns, or as rolling epidemics in cosmopolitan communities where it erupts due to importation from an outside source, making its way through the replenished population of susceptibles (both newcomers and children not previously exposed to the disease), before once again disappearing from the community.⁴⁸

Two manifestations of smallpox have been distinguished in the past. The more severe form of the disease; *Variola major* historically carried a death rate ranging between twenty-five to thirty percent, while the milder *Variola minor* was associated with a mortality level reaching only as high as one percent.⁴⁹ Both strains of the disease have an incubation period of approximately twelve days, following which, individuals suddenly exhibit debilitating symptoms including; fever, headache, muscle pain, vomiting and convulsions. The diagnostic rash appears a few days following the initial symptoms, covering the body with particularly heavy concentrations on the face, hands and feet. A few days more, and the red spots of the rash become pustules, which begin to crust over after the span of another week.⁵⁰ If the individual weathers the course of their illness without complication (which can include secondary infection of the skin lesions, hemorrhage of vital organs, toxemia, blindness and male infertility), then a full-recovery is indicated approximately three to four weeks from the initial onset of symptoms, after which the person enjoys life-long resistance to the disease.⁵¹ Historically, as many as ninety percent of

⁴⁸ *Ibid.*

⁴⁹ *Ibid.*

⁵⁰ *Ibid.*

⁵¹ *Ibid.*

susceptible individuals exposed to smallpox developed the disease.⁵² With no known cure, prevention in the form of isolation and quarantine of infected individuals remained the only viable form of intervention in the natural course of the disease.⁵³ As such, smallpox understandably inspired near universal fear and anxiety, even after the advent of vaccination.

For several reasons discussed below, it is only possible to reconstruct the incidence of smallpox in the Klondike through qualitative materials; namely references to the disease detected in the correspondence of local health, government and police officials of the Yukon Territory, which represent commentary on all aspects of the disease from various points of view. Evidence pertaining to smallpox also comes from the *Dawson Daily News*, which captured the social impact and local experience of the disease in the Klondike community. While the nature of the data means that the actual incidence of smallpox is probably underrepresented, reconstructing the number of cases noted within these documents allows for observations regarding important trends that are not necessarily apparent until the data is constituted in this manner.

In all, Yukon officials knew of the occurrence of thirty-three cases of smallpox between June and October of 1900, while at least forty-one cases occurred throughout the transportation season (from the time that the ice went out of the rivers in the spring, until they freeze-up in the fall) in 1901.⁵⁴ Incidence fell dramatically in 1902, with only three new cases having been

⁵² *Ibid.*

⁵³ *Ibid.*

⁵⁴ Megan Highet, *Rushing to the Grave*.

reported throughout the Territory.⁵⁵ It speaks to the effectiveness of the efforts of health and government officials to control against the importation of the disease into the Yukon, that no more eruptions of smallpox occurred throughout the remainder of the period of study.

Following this reconstitution of incidence of smallpox, content analysis was preformed upon all articles in all available editions of *The Dawson Daily News* published between 1899-1904, for the purpose of determining the level of public interest associated with the threat of smallpox in this particular time and place. This exercise revealed public interest in smallpox to be positively correlated with increasing prevalence of this disease among the Klondike population, as news coverage peaked in accordance with incidence of the disease in the Yukon Territory (see figure 1).

Although each of the outbreaks of smallpox that occurred in the Yukon between 1900 and 1902 was extensively documented in qualitative data sources such as *The Dawson Daily News*, no such deaths were ever recorded in the Death Register for the Yukon Territory, nor were any admissions made to Saint Mary's Hospital for treatment of this ailment throughout the period of study. The lack of quantitative evidence pertaining to the existence of smallpox within the Klondike community can be partially explained by the practice of quarantining smallpox patients at separate facilities, such as the isolation hospital on Dog Island (located three miles down river of Dawson City).⁵⁶ This resulted in the loss of morbidity data as represented by the

⁵⁵ *Ibid.*

⁵⁶ Library and Archives of Canada, Yukon Territory Records sous-fond, Subject files, R216-179-X-E, R.G. 91, Vol. 67, File 7.

Patient Register for Saint Mary's Hospital, since those who contracted the disease were never admitted to this institution due to the risk of contagion.

Regarding the dearth of mortality data, it is likely that it was *Variola minor* which was responsible for the outbreaks of smallpox in the Klondike, rather than the more lethal *Variola major*. While *Variola major* wreaked considerable havoc in contemporary communities, leaving huge mortality bills in its wake, the fact that no deaths from smallpox ever occurred among the gold rushers speaks to the unusually mild virulence of the disease as it presented in the Yukon, which is consistent with outbreaks *Variola minor*.⁵⁷ This being the case, the gold rush population also provides the rare opportunity to investigate the biosocial impact of outbreaks of *Variola minor*, as the majority of historic case studies of smallpox have involved epidemics of the far more deadly *Variola major*. This tends to be much better documented since they typically produced a great deal of quantitative evidence in the form of extensive death tolls.⁵⁸

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The Significance of Smallpox in the Klondike

It is no coincidence that outbreaks of smallpox during the gold rush were always associated with the movement of people during the peak transportation season. The Klondike was

⁵⁷ Alfred Crosby, *Smallpox*.

⁵⁸ Barbara Craig, "Smallpox in Ontario: Public and Professional Perceptions of Disease, 1884-1885," in Charles Roland (ed), *Health, Disease and Medicine: Essays in Canadian History* (Toronto: Hannah Institute for the History of Medicine, 1984), pp. 215-249.

characterized by the large-scale relocation of individuals from vast distances and various locales into a relatively small area, with the primary means of transportation being concentrated around the time that the ice went out of the river in the spring (at which time steamers were able to resume ferrying passengers in and out of Dawson City) until the waterways froze up in the fall. This proved to be the ideal context for annual eruptions of this disease since smallpox has no reservoir outside of the human body. It can only exist in a community with a replenished population of susceptibles such as that which was ferried, along with the virus, in successive waves into the gold fields. This correlation is immediately apparent when the cases of smallpox known to officials within the Yukon Territory are plotted in chronological sequence (see figure 1), as the peaks in incidence correspond precisely to the flood of passenger vessels into the Klondike as soon as river navigation opened in the spring, and just prior to the time that ice choked off the transport network in the fall.

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Despite the mild threat posed by smallpox due to the low mortality rate associated with the disease in this particular time and place, measures aimed at combating smallpox in the Klondike were nevertheless stringent, no doubt due to the fear towards the disease that the gold rushers had instilled in them prior to venturing North.

One example of this persistent fear can be gleaned from the implementation of preventative measures that required travelers to submit to compulsory medical examination prior to entering, and upon moving about the Yukon, verification of which (in the form of a validated certificate of health) was required to be presented upon demand at various checkpoints

throughout the territory.⁵⁹ Steamers were likewise subject to inspection; both prior to departure and before passengers could be permitted to disembark, while mandatory quarantines were imposed upon entire communities when even a single individual was suspected of suffering from the dreaded disease.⁶⁰ Finally, effective January of 1900, the Yukon Council passed a bill making all who entered the territory subject to compulsory vaccination. Noncompliance was punishable by a heavy fine or confinement.⁶¹

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Interestingly, the gold rushers raised little resistance to the local vaccination legislation as opposed to the hostile and vehement backlash often associated with this issue in other communities around the turn of the previous century. While the issue was hotly debated and widely protested elsewhere in the country, it seems that Klondikers were simply more concerned with ensuring that their productivity was not compromised by the threat of incapacitating disease, than they were about having their personal liberties infringed upon in the form of mandatory immunization.⁶²

Although the mark left by smallpox on the health status of the Klondike population was negligible given the fact that the mild version of the disease did not result in any deaths

⁵⁹ Library and Archives of Canada, Yukon Territory Records sous-fonds, Subject filed, R216-179-X-E.

⁶⁰ Library and Archives of Canada, Yukon Territory Records sous-fonds, Subject files, R216-179-X-E; Sessional Papers of the Dominion of Canada, #15, 1902; 1903; Yukon Archives, *The Dawson Daily News*.

⁶¹ Yukon Archives, Yukon Council Ordinance Respecting Vaccination, No. 39 of 1900.

⁶² See for example, Katherine Arnup, "Victims of Vaccination?: Opposition to Compulsory Immunization in Ontario, 1900-90," *Canadian Bulletin of Medical History*, volume 9, pp. 159-176; Barbara Craig "Smallpox in Ontario: Public and Professional Perceptions of Disease, 1884-1885" in C. Roland (ed), *Health, Disease and Medicine: Essays in the Canadian History of Medicine* (Toronto: Hannah Institute of the History of Medicine), pp. 215-249.

throughout the period, the fear that it nevertheless inspired had both a significant and lasting impact within the community. For instance, Dawson City was designated as an inland port by the federal government in response to questions from local authorities regarding who should bear responsibility for the expense of guarding against the importation of this communicable disease by the cosmopolitan gold rushers.⁶³ Additionally, and on more than one occasion, freedom of the press was impeded by the local government who sought to prevent word of the existence of smallpox in and around Dawson City from reaching the outside world. In their bid to protect local commerce during the busiest time of year, government officials went so far as to intercept telegraphs and persuade visiting news correspondents not to report on the presence of the disease in the community.⁶⁴

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The jurisdiction of the Medical Health Officer was also expanded from the original radius of two-and-a-half miles from the Dawson City courthouse in order that he might impose quarantines upon outlying communities, while bylaws were drafted to afford him the power to ensure that every Klondiker was vaccinated against contagion.⁶⁵ In ordering quarantines and requiring travelers to submit to medical examination, the health officer, acting on the authority of the Yukon Council, thus intruded into the private lives of individuals and restricted their personal liberties in the interest of public health.

⁶³ Library and Archives of Canada, Yukon Territory Records sous-fonds, Subject files, R216-179-X-E, R.G. 91, Vol. 67, File 7.

⁶⁴ *Ibid.*

⁶⁵ *Ibid.*

Finally, international relations were tested when boarder officials at the Canadian-American boundary were charged with diplomatically ensuring that epidemics on American soil were not permitted to spread to the Canadian population.⁶⁶

The Significance of Qualitative Data Sources

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Qualitative and quantitative data sources are sometimes construed as being at odds with one another. Yet, while qualitative materials are often employed to contextualize case studies or complement research grounded in statistical analyses, such documents have nevertheless been demonstrated to be both valid and valuable as primary data sources in their own right. The correspondence and official reports of the local authorities in the Yukon Territory have provided important information about the health status of the gold rush community during this historically important and contemporarily relevant period that is otherwise unavailable. Further, (as figure 1 visually depicts) it has been demonstrated that newspaper articles may serve as a litmus for the burden and social experience of a disease within the community, as articles relate to the public's perception of the threat posed to their wellbeing by disease in their midst. In fact, an argument can be made that newspapers can provide an invaluable albeit an unconventional source of data that may serve as an indicator for the presence, social impact and even the relative prevalence of a disease within a historic population when traditional sources of data are lacking.

⁶⁶ *Ibid.*

Along these lines, the potential for employing archival data sources such as newspapers to contribute as primary material in studies of population health has been explored before. Adelman and Verbrugge, for example, concluded that “newspaper articles about disease provide windows on their social histories and barometers of their contemporary social impact”.⁶⁷ Although questions are sometimes raised regarding the validity of qualitative materials due to their subjective quality, it is nevertheless generally consented that no dataset is absolutely without error, while it has been noted that in the case of qualitative sources, the potential for bias and selectivity runs the risk of “silence and emphasis rather than outright false information...[and thus] there is no *a priori* reason to believe that data collected from would be less valid than other commonly utilized sources”.⁶⁸

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It is useful to extrapolate the incidence of disease from newspapers to approximate the biosocial impact of a disease within a historic community to other qualitative data sources that were produced contemporaneously with the disease or disorder within the community. In the case of the Klondike gold rush, turning to such under-utilized qualitative materials can compensate for the absence of evidence for both scurvy and smallpox in traditional quantitative data sources. This approach also holds great potential in regard to studies of population health in which primary quantitative sources are suspected of

⁶⁷ Richard Adelman & Lois Verbrugge, “Death Makes the News: The Social Impact of Disease on Newspaper Coverage,” *Journal of Health and Social Behavior*, volume 41, No. 3, 2000, p 363.

⁶⁸ Roberto Franzosi, “The Press as a Source of Socio-Historical Data: Issues in the Methodology of Data Collections from Newspapers” *Historical Methods*, volume 20, No. 1, 1987, p.7.

being incomplete, since in both the case of Adelman and Verbrugge's findings, as well as in the case of the Klondike community, a positive correlation was indeed found between the number of articles published in local newspapers and incidence of that disease as reconstituted through other archival documents.⁶⁹ Thus newspapers, and by extension, relevant archival documents in general, have been shown to "serve as a reliable indicator of the degree to which a disease has impacted a community based on the amount of coverage it received".⁷⁰

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With the goal of studying the biosocial impact of disease in past populations, it is apparent that qualitative resources should be more rigorously sought out since they often capture the interest, concerns and experiences of average individuals, whereas analyses of quantitative sources alone requires the researcher to take an etic and retrospective approach in trying to interpret these same aspects of disease ecology in a much more roundabout manner.

Conclusions

As has been demonstrated in the case of the Klondike gold rush, studies of morbidity and mortality can yield a great deal more insight into what life was like for the average individual in an historic community than simply what ailments people suffered and died from. In this instance, the impact of both scurvy and smallpox has been found to have been imperceptible when relying solely upon quantitative materials.

⁶⁹ Richard Adelman & Lois Verbrugge, "Death Makes the News".

⁷⁰ Megan Highet, *Rushing to the Grave*, p. 74.

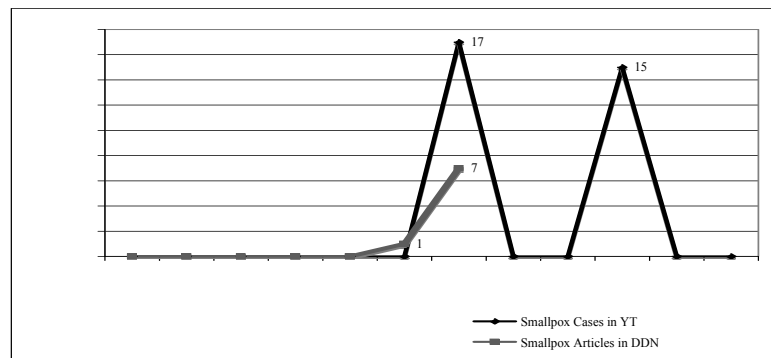
Nevertheless, both of these conditions had important implications, extending far beyond the illness experiences of individuals—the implications of which would have been overlooked had analysis relied solely upon quantitative data sources.

Being such an illustrious event in Canadian history, the Klondike Gold Rush continues to capture the interest of researchers and captivate the imagination. It also, however, offers an intriguing opportunity to study a range of topics pertaining to matters of health, and disease epidemiology in frontier boomtowns. While Dawson City was certainly not the first frontier boomtown, neither was it the last. That is, to say, what is occurring now has already happened before, and parallels can be drawn between modern single-industry and rural resource populations and this particular gold rush era community. Many of the inevitable health problems currently being faced by present-day industrial boomtowns were likewise experienced by the stampeeders who rushed to, and then settled in the Klondike. Thus, while such communities may be separated from the study population by great spans of time and space, the potential exists to extrapolate from what can be learned from past examples to reveal practical implications which are applicable in the context of present-day communities that often struggle under very similar circumstances.

Finally, an argument has been made for the position that qualitative data can be extremely valuable to studies of historic communities, not only when it is employed to contextualize quantitative analyses, but also, and perhaps more importantly, to capture aspects of morbidity and mortality that for whatever

reason, may be missing or underrepresented in traditional primary data sources.⁷¹

Figure 1: Incidence of Smallpox and Frequency of Newspaper Articles Pertaining to Smallpox in the Yukon Territory (1900).



Source: Yukon Archives, The Dawson Daily News (1900).

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