



VOYAGE

CANADA

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CONTENTS



1.	Editor's Note <i>Mia Simovic</i>	p4
2.	Canada is Leading the Way <i>Hannah Morris</i>	p7
3.	The Multi-Million Dollar Cartel <i>Jake Canton-Perry</i>	p9
4.	Canada's Wildlife: Caribou <i>Lila Goodwin</i>	p11
5.	The Happy City <i>Mia Simovic</i>	p12
6.	Canada's Trade Future, Trump and All <i>Zak Lennard</i>	p16
7.	Canadian Politics Offers Us Hope <i>Jacob Knapper</i>	p18
8.	Canada at 150 <i>Lula Ashton</i>	p20
9.	Education in Canada <i>Hugo Pang</i>	p22
10.	Population and Climate in Canada - are they Linked? <i>Francesca Bell</i>	p24
11.	Canadian Arctic Experiences Hottest Year on Record <i>Joachim Harris</i>	p26

EDITOR'S NOTE

Welcome to the new sixth form magazine 'Voyage'. This publication aims to combine the fields of politics, economics and geography to give the reader a wide understanding of the world from a variety of perspectives. Each edition will be specific to a country, providing a detailed exploration of the current affairs and culture of the nation. The first issue has a wide spectrum of articles from Year 12 students ranging from the changing climate to Justin Trudeau's new government. Canada is the country of choice of this edition as I believe its attitude towards immigration, feminism and economics provides hope amongst the increasingly extremist and isolationist West.

Mia Simovic



CANADA IS LEADING THE WAY

The UK's immigration policy is atrocious and that partly relies on our backward looking society, our BREXIT vote only one indicator of the dismal situation. The UK promised to welcome 20,000 by 2020 Syrian refugees but up until March 2016 only 1,300 had arrived. By contrast between January and March 2016 Canada welcomed more than 26,000 Syrian and asylum bids were later processed for an additional 12,000 refugees from Lebanon, Jordan and Turkey. Despite this vast influx of foreigners, racial tension is far lower in Canada than it is in the UK: 80% of Canadians think immigrants benefit the economy according to a recent study conducted by the Environics Institute. To top it all off Canada has a better gini coefficient, average annual GDP increase, paid maternity leave, life expectancy and world ranking than the UK. It's life-satisfaction score is the best in the world.

So where have the UK gone wrong?

Canada's records haven't always been perfect. In the 1900s many Punjabi and Jewish refugees were turned away and 100 years ago immigrants from China had to pay a head tax. However, in 1962 all ethnic criteria for migrants was eradicated and non-Europeans were widely welcomed. Moreover Canada admitted an astonishing 321,000 immigrants in the year to June 2016 and it is considering increasing that to 450,000 by 2021. Immigrants account for nearly 1% of its population and on average 80% of them will become citizens. Furthermore a fifth of Canada's population is foreign-born, nearly twice that in America. The celebration of immigration is visible in Winnipeg where public schools have classes taught in Spanish and Ukrainian as well as French and Cree; its Central Mosque round the corner from the Hindu Society of Manitoba and the Juliana Pizza & Restaurant serves its "Greek/Jamaican food" only a little further on. This response is due to a number of reasons.

Firstly, the left wing ideals of Prime Minister Mr Trudeau establish a social norm of benevolence-visible through his selfies with multiple fans. Moreover the selection process of immigrants, created in 1967, selects by judging aspects such as skills and education, rendering immigrants to be more than twice as likely to have university degrees than natives- increasing positive attitudes. In addition due to the geography of Canada illegal immigration is uncommon and hardly noticeable so negative stereotypes are reduced. Although inequality income has increased in Canada, it is far lower than elsewhere and poverty has fallen significantly since the 1990s. Linked to this low income men are less likely to die prematurely. In the US life expectancy in the top income quartile is 12.1 years higher than in the bottom quartile; in Canada it was only 4.7 years. These factors, alongside unemployment benefits, contribute to a high level of public security and we see that as people become safer, scape-goats are targeted more infrequently, and immigrants are welcomed.

The fundamental key to challenging selfish prejudice in both Britain and worldwide, is to reduce inequality and hardships for the natives. Investment in the welfare state and workers rights lead to increasing stability, which leaves natives feeling less under threat. A vast proportion of the BREXIT voters were working class, old labour supporters. If quality of life for natives increases and wealth gaps are narrowed, immigration will in turn be celebrated, reducing cultural tension and racism, and will instead supply economic and social benefit, including income to the economy in taxes and spending alongside cultural exchange. Perhaps there is something to be learnt from Canada's example.

By Hannah Morris



THE MULTI-MILLION DOLLAR CANADIAN CARTEL

When thinking about cartels, some may picture drug dealers, weapon smugglers, more or less anything from the dark and illegal side of the Planet. Others may picture a collaboration of huge oil companies or a group of Russian oligarchs. However, no one would think of Canada, the land of the apologetic, to be home to a ruthless multi-million dollar cartel. Yet there is one. And it dominates the maple syrup industry.

FPAQ (Federation of Quebec Maple Syrup Producers) is the maple syrup cartel of the world pulling in a monstrous income of approximately \$265 million each year. It has taken over the industry through its control of 72% of the world's supply of maple syrup and consequently abused the principle that 'if you take control of supply, you take control of price,' which they have achieved through a relatively simple and legal process.

In the region of Quebec there are 13,500 maple syrup producers that all send the FPAQ a fixed amount of maple syrup year on year depending on the quota set for them. Some of this maple syrup is immediately exported and sold, while the rest is stored away in warehouses keeping supply steady and prices high. The producers however are only ever paid after the maple syrup is sold, which for some, is years after they produced it. This system has meant that a barrel of maple syrup now costs \$1,300, almost 26x more expensive than oil, which is seen as the main luxury in the world.

What really makes FPAQ a cartel is the vicious methods to ensure that all of the maple syrup industry stays monopolised with them. One independent producer in Quebec, who was not part of the FPAQ machine, found his product seized by the cartel and forced to move away to New Brunswick. Even after moving he wasn't safe from the grasps of the FPAQ, as he was suddenly hit by an injunction restraining him from continuing his production.

Even so, it's believed that, like all cartels, FPAQ's time and monopoly of maple syrup is almost over as other countries start to tap into their own supply of maple trees. The US states of New York, Vermont and Hampshire have three times as many maple trees as the state of Quebec and production is rapidly increasing each year in those areas. Once the companies working there achieve a certain size then the FPAQ's monopoly will be stripped off them and they will no longer be able to set high prices, which I believe personally would not be too bad an idea

By Jake Canton Perry

CANADA'S WILDLIFE: CARIBOU



Height: 1.2m at the shoulder

Length: 1.8m

Weight: 113-318kg (males are larger than females)

Lifespan: 10-15 years

Distribution: Found in Russia and some parts of northern Europe, but mostly in Canada and Greenland.

Caribou are the North American subspecies of reindeer. They're capable of living in one of the harshest climates on earth, with winter temperatures of minus 40 degrees celsius rising to 26 degrees in the summer. They are found in a range of habitats, from forests to mountains and the Canadian tundra. In Canada their population is 2.4 million. To survive in such an extreme climate they have developed a range of incredible adaptations:

Nasoturbinal bones are curled thin bones in the nose. These support thin tissues that are supplied with blood vessels to warm the air they breathe in before it reaches the lungs.

Hooves that change with the seasons: in summer they have footpads that are spongelike to provide traction on the soft wet ground. As winter comes it exposes a sharp hoof which cuts through the snow and ice to enable the caribou to walk through the snow and find food underneath it.

Ultraviolet vision means the urine of predators strongly stands out, as well as lichen and footprints, ensuring they never lose their herd and making it easier to find food in the snow.

Caribou live in herds that can contain anywhere between 50,000 and 500,000 individuals, making them safer from predators. They also migrate up to 5,000 km a year, further than any other land animal. Summers are spent further north where

days are longer and plant growth is better. Winters are spent further south in forested areas where they can easily find shelter from the regularly stormy weather.

Both females and males have antlers for defence and clearing the snow. They are also used for fighting amongst males. The antlers are made of bone and are grown and shed annually. The males shed their antlers between November and December, whereas females keep theirs until the spring in order to shift the snow. Other adaptations include a thick fur coat, and moving to higher altitudes in the summer to avoid the biting insects.

Climate change and human interference are affecting caribou in a number of ways:

Increased droughts and fires, which can kill the lichen that the caribou feed on, are decreasing their winter food supplies.

Due to the increased temperatures plants are blooming earlier. However, caribou begin their spring migrations when the days get longer, which means by the time they migrate the plants are past their prime and have less nutritional value.

Woodland Caribou are also being endangered by human interference, such as poaching and logging, which decreases their habitat. New towns and roads are also being built on their migration routes, which confuses the caribou and can sometimes cause them to get lost.

All of this is combining to kill off the caribou in one of their last remaining habitats.

By Lila Goodwin

THE HAPPY CITY



The 'Happy City' is a concept developed by Canadian entrepreneur and author Charles Montgomery in response to the growing dissatisfaction and dangers of urban existence. The movement aims to 'transform our lives through urban design' and offers a tangible and attainable solution to the failures of the metropolitan environment. In a decade characterised by religious extremism, yoga fanatics and spiritual gurus, many of us search for fulfilment and 'happiness' through positive psychology or religious enlightenment. The aim of these techniques is uniform; to be rewarded with good fortune, quite literally. Charles Montgomery proposes a counter method which improves the quality of life of citizens without indoctrination or state-funded mass counselling, and involves the physical reconfiguration of our urban environments.

The 'happiness paradox' is a concept derived from statistics that show that wealth does not equate to happiness. If it were so, the populations of the US, Japan, Canada and even the UK would be ecstatically happy. Although the British got

40% richer between 1993 and 2012, the rate of psychiatric disorders increased rapidly; emotional problems amongst British teenagers doubled in the last three decade and the suicide rates amongst UK college students increased by 170% between 1985 and 2005 and another 50% between 2007 and 2012. Although social factors have contributed to the sudden spiral in such data, like the increased acceptability to talk about depression and other mental illnesses, the numbers are not encouraging. This suggests a revolutionary attitude to urban living is needed to make success of the swathes of wealth being generated by highly complex and developed societies.

A principal failure of many urban environments, including the Canadian cities of Vancouver, Toronto and Calgary which were voted the 'least happy' places to live in the country, was their tendency to disintegrate any feeling of trust between neighbours and strangers. The question: If you dropped a wallet somewhere on your street, what are the chances you would get it back if a neighbour found it? A stranger? A police officer?,

was by John Helliwell, a prominent behavioural economist, inserted into numerous Canadian surveys and results showed correlation between the cities with the highest trust levels and the greatest life satisfaction scores. The real rates of wallet return were surprisingly far higher than predicted by the Canadians. In fact, in Toronto there was a success rate of 83% even though the population estimated that there was only a 25% chance of them regaining possession of the wallet. This leads us to the conclusion that cities present the illusion of danger and that the mutual feeling of mistrust is a result of the lack of positive social interactions and a culture of isolation. The declining social capital across the developed world can be seen as a key cause of 'unhappiness' and in 2008 a group of Italian economists distinguished that this decline was more corrosive to mental health than the rising income inequalities. Stress acquired from work, congestion and overcrowding can contribute to social anxieties and the desire to be contained in one's own 'bubble' (many people use headphones as a means of limiting social interaction, especially on public transport). A sense of insignificance

can also result as one becomes aware of the lack of influence they have on the lives of their fellow city dwellers. The lack of community feeling can be illustrated using the Canadian city of Vancouver. One third of 340,000 people surveyed said it was 'hard to make friends', just over 50% knew two names of neighbours and the most cited reason for not taking part in community activities was that people 'had nothing to add'.

Even so, Vancouver has made considerable progress in the last three decades. In the early 1970s the citizens rejected a plan to encircle downtown Vancouver with strips of freeway (becoming the only city in Canada not to have a major highway running through its core.) Engineers have actively slowed cars down by installing pedestrian crossings and traffic lights and the city has exploited its natural borders; the ocean and Stanley Park rainforest enclose the city. Municipal planners direct developers to create 'community' spaces or 'give back the neighbourhood' schemes when approving their developments ensuring a balance of housing and communal space.



The natural borders of the city and farmland restrict expansion and urban sprawl, discouraging excessive road construction and long commute times . A population surge fuelled by immigration has resulted in the growth of a 'vertical city' (150 residential towers have sprouted since the late 1980s and joining the 100 that were developed in the 60s and 70s, although these present their own issues). The effects have included Vancouver rising to the top of the Mercer, Forbes and Economist Intelligence Unit quality of life rankings. Vancouver has also managed to escape the inevitable impacts of an increasingly crowded metropolitan environment; commute times have not increased since 1992 and the city has achieved the lowest carbon footprint of any major city on earth. The commute times have been repressed by the workers who have moved closer to their offices (often into the tower blocks). Two thirds of trips made in the capital are made on foot, on public transport or using other forms, for example, bike or scooter. The average family in Vancouver owns 1.25 cars, considerably less than those in suburban Surrey (1.7) and in America (1.9),

demonstrating the city's progressive and sustainable attitude towards growth and prosperity.

Another example of a less developed yet increasingly 'happy city' is Bogota in Colombia, whose mayor, Enrique Penalosa, has used pioneering social policy to transform the previously lethal city centre into a symbol of urban revival. Penalosa and Montgomery suggest the basic failure of urban development in the 20th century is that cities welcome private vehicles and do not provide the fundamental needs of people; being around others and intimacy with nature, a parallel to the attitudes in Vancouver. Penalosa aimed to challenge and overpower the engrained philosophy of his people; that wealth is a measure of worth (Colombia would feel a second or third rate society when compared to the Americans). His first step was to disregard the ambitious plans to expand the city's highway network and to instead spend his budget on an extensive new string of public plazas, parks, libraries, schools and nurseries, but particularly bicycle networks to tackle the issues of speeding and

excessive pollution (80% of air pollution worldwide is generated by urban settlements). More controversial tactics included the hiking of fuel taxes and the banning of commuters using the car more than three times a week. The changes opposed the westernised vision that millions of middle-class citizens have 'chased to suburbia'. In fact his policies proved so popular the Bogotan's voted to ban all private vehicles during the rush hour and to maintain an annual 'no vehicle' day of the 24th February, which forces all Bogotans to commute and travel using other means such as rollerblading, biking and public transport. A key aspect of Penelosa's philosophy is his urgency to remove his citizen's obsession with economic boom, political revolution and westernisation, but to glamourize social change, which has been crumpled by cynicism and a culture of corruption.

The urgency to drive a social revolution has stemmed from the recent attention to 'happiness' as a measure of the success of a country. In fact, a mathematical equation to determine the extent of one's happiness was

developed by Nobel prize-winning Gary Becker and Luis Rayo and is translated to: happiness= your success minus your expectations- your perceived social status. The definition clearly has some limitations (what constitutes 'success?') yet it provokes the idea that our satisfaction in life revolves around our comparison to others but also our interaction with those around us. The cities of Vancouver and Bogota present ground breaking attitudes and tangible policies designed to improve the psychological quality of life of their citizens. Both cities demonstrate that our wellbeing is closely tied to the environment and so provide just another reason for cities across the world to take part in the 'green' revolution.

By Mia Simovic

CANADA'S TRADE FUTURE, TRUMP AND ALL

The future of Canada's trade is both complex and yet to be resolved with the new president-elect of the US forcing uncertainty over the future economy.

The United States and Canada enjoy a unique pair relationship. That relationship reflects a friendship, underpinned by shared geography, social connections and powerful, multi-layered economic ties. The United States and Canada have both repeatedly confirmed their common commitment to strengthening the security of the border by working cooperatively to address threats early, facilitate trade, promote economic growth and jobs, integrate cross-border law enforcement and progress with critical infrastructure and cyber-security.

The Canada to US two way merchandise trade is the largest trade agreement in the world, totalling \$750 billion in 2014. The US is by far Canada's largest source of direct investment, and by far the largest destination for Canadian investment abroad. Not only that, Canada and US share many electricity grids, water and gas pipelines as well as critical infrastructure such as bridges and railways. Canada is the top export destination for 36 of the 50 US states, and so the bilateral trade agreement supports and creates millions of jobs either side of the border.

The recent election of Donald Trump creates uncertainty in the current trade and investment relationships between the United States and Canada. Although election promises do always result in post-election action, given the conviction of President-elect Trump's promises and the anti-trade (protectionism) perspective of many of those

who elected him, it can be expected that some action will be taken to further his international trade and investment promises.

During the spiteful presidential campaign, Donald Trump explained how the North American Free Trade Deal (NAFTA) was a "disaster" that he would "abolish on his first day in office". The NAFTA agreement, which was created in 1994, holds together the trade of Canada, US, and Mexico, reducing tariffs and increasing quotas that makes foreign trade and investment extremely easy between these countries. However, abolishing this trade deal could rewind economic agreements between these countries by over 25 years, creating a domino effect of political and therefore social problems, as already being seen with the Mexican wall.

Over the past 100 years Canada has imported Softwood Lumber to the US, but the US has always imposed high tariffs on the wood as it is Canada's only trade partner with this product. In the past 10 years, tensions have risen due to further tariffs and anti-dumping legislations on Canadian based companies. This trade dispute will likely be the first trade related debate between Minister Trudeau and Trump, however the new American protectionist movement will likely result in less trade and more lengthy disputes. Not only that, 40,000 Canadian jobs rely solely on the lumber trade, meaning the economy in Canada will fall if the Lumber trade goes under.

In October of last year, Canada signed a contract with the EU amid fears of trade constrictions with the US. This agreement provides for duty-free trade and offers agricultural producers further market access. Although this deal is only provisional, it creates a safety net for Canada as it now has another set of countries to trade with if Trump destroys NAFTA and does not put up an alternative.

Overall, Canada's trade is closely tied with the USA, and the protectionism of Trump could reduce trade in his first days of office. NAFTA holds Canada to the US, however Trump would most likely replace it with another, similar trade deal that will save Canada from being trade isolated. If Trump refuses to cooperate with Canada's needs, Canada has a new set of partners (the EU) that will definitely aid the agricultural side of the economy. The most likely area of Canada's economy that will be worst affected would be the lumber trade, as the tensions are already seen and will only get worse. I think that Canada will definitely not fall to dangerously low economic activity, but trade will become harder to forge and anticipate.

By Zak Lennard

CANADIAN POLITICS OFFERS US HOPE

Recently the western world has been subjected to a wave of uncertainty due to a disillusionment with the status quo. Voters in the UK, US and Italy have all rejected the establishment with populist movements finding a new third way: not a centrist political view, but movements that incorporate the hard-line social policies of the right, such as harsh immigration restrictions, with economic proposals that could be seen as left-wing, such as preventing outsourcing of labour via the free market.

One year before these key elections and referenda, which have challenged the western political consensus, Canadians went to the polls. They elected the Liberal Justin Trudeau, a young centrist who won by expanding his party's base and bridging the gap between older, more conservative liberals and young left-wing voters. Trudeau's win represents a win for the centre, which has been defeated or on the road to being defeated elsewhere. It shows that a candidate need not resort to tasteless remarks on foreigners and immigrants (like Donald Trump with his claim that Mexicans are 'bringing drugs, bringing crime'), or have to isolate some members of society to win the votes of others (like Angela Merkel with her promise of a ban on the burqa). And Trudeau's win is not just because of Canada's tolerance: polling shows that Canada is not immune from the far-right's leverage, with a growing KKK presence and more influential far-right groups. Trudeau's win shows that an alternative to the political establishment doesn't have to be hijacked by the far-right, but can be a moderate and considered change if the candidate who represents this vision is appealing to the electorate and is savvy in the digital age. Trudeau harnessed the power of social media in his campaign, and instead of using platforms to whip up fear and hatred like some in the Brexit, Trump

or No campaigns, spread a simple and popular message of hope for the majority of middle and working class Canadians that they had lost during their previous Conservative government. Trudeau also proved himself popular with different demographics: his core message resonates with traditional Liberal voters but his young personality and his modern attitudes on issues like feminism and particularly the LGBT community brings the millennial demographic into his camp (while they overlook his stance on issues like the Saudi arms trade!). Because of this, Canadian society has given the impression of being a liberal haven and a hopeful alternative to the post-Brexit and post-Trump world in which many progressives feel alienated.

After Trump's win on 8 November 2016, the website to apply for Canadian citizenship crashed with the number of American applications. After 2016, the year of mass political upheaval in Britain, America and Italy, and during 2017, the year of French, German and Dutch elections, it is comforting for those who either have liberal politics or just a distaste for unconsidered populism to look to Canada and to see how political change can come about with a fresh-faced candidate who needn't promise overhaul, but instead make the centre ground seem appealing again.

By Jacob Knapper

CANADA AT 150

On July the 1st 2017 Canada will be celebrating the 150th anniversary of the confederation. Remembering the union of separate states that became the prominent force that Canada is today; the world's tenth largest economy.

Over half a billion dollars have been set to commemorate this momentous occasion, riddled with extravagance, with \$180 million allocated for celebratory projects, both big and small.

There is advantages to this celebration, reflecting on the countries achievements and its economic advances, but where are these \$500 million taxpayer dollars going exactly? To a party on Parliament Hill headlined by 'national treasure' Carly Rae Jepsen, an app awarding digital badges to those who attend the events, and a documentary set on a striking red sofa travelling coast to coast, showcasing teary eyed patriots confessing their love for their Canada. Montreal alone is spending \$35.9 million in illuminating the Jacques Cartier Bridge as part of the festivities.

At a time when Canada's long-term fiscal picture is deteriorating, with growth stalled at 2% or less over the next decade or so, and the imminent threat of Trump and whatever catastrophic action he may take, should Canada really be putting so much into this celebration? Wouldn't this money be better used for critical spending? The Globe and Mail reported the budget for Canada 150 on the same day as they presented the country's declining fiscal picture, a contrast brimming with irony.

However, there are the positive economic impacts from this venture also, with investment in fixing up public facilities bound to develop communities and a likely

increase in tourism due to Parks Canada offering free admission to any National Park throughout 2017. The charismatic Prime Minister Justin Trudeau certainly thinks the celebrations are worth every cent, having stated that he will use Canada's 150 to "really connect with Canadians" and as a "moment of reflection." Critics however point out the political value of the celebrations as a distraction from more difficult issues, such as environmental concerns, including the tar sands and tensions within Canada's diverse population.

Some of the cost of Canada 150 is also coming out of the military operations budget, which will have significant implications, with some public opinion condemning this as "irresponsible." Others criticize these lavish expenses at a time when Canada lags behind its peers in global spending, with foreign aid expenditure almost at an all time low, at odds with the progressive image of the ruling Liberal Party. In order for Canada to match international assistance levels set by the G7, the government would have to double its contribution, an alternative area into which Trudeau could invest the millions poured into Canada 150.

Therefore, despite the fact there are undoubtedly positive aspects of the anniversary celebrations, there is still a huge force of opposition coming from the public as to whether this immense budget couldn't be redirected more responsibly. An appeal to look forward to a prosperous future, rather than damaging the economy by reflecting on it's past.

By Lula Ashdown





EDUCATION IN CANADA

In Canada there is no ministry or department of education at federal level. The 10 provinces and 3 territories have an obligation to take responsibility for education in their area. Although the structures of education are similar to a large extent across the country, there are some variations in each province and these variations are created by the jurisdiction of each province in response to specific circumstances, geographical location, and the historical and cultural heritage of the populations that they serve. For example, Quebec has declared itself to be a unilingual state in which French is the only official language, meaning it is the only predominantly French-speaking province in Canada. This is because 28.8% of the population of Canada is French as a result of the French colonialization in the 1600s. On the contrary, Alberta and Saskatchewan are unilingual provinces in which English is the only official language.

At local levels, schools are governed by a superintendent and a locally elected school board or board of education in each province. The board is in charge of formulating instructional policies, hiring teachers, purchasing equipment and overseeing the day-to-day running of schools. Parents are encouraged to play a big role in their children's learning. Therefore, schools are constantly seeking volunteer "teacher assistants" to help with reading, art and special projects. There are also Parents Advisory Councils in most schools who

are concerned with raising money for buying equipment such as computers, video surveillance, emergency lighting, playground equipment and school buses for children with special needs.

There are generally five stages in the Canada's Education Systems, pre-elementary, elementary, secondary, bachelor or college diploma, master and doctorate. The pre-elementary education lasts for around two years. The duration of primary and secondary education is between eleven and twelve years. Afterwards there are a good range of pathways for students to choose such as the college diploma, bachelor degree or apprenticeship. A secondary-school diploma is issued upon successful completion of the secondary curriculum after the secondary education. It takes between three to four years and between one to three years to finish a bachelor and a master respectively. Quebec has the most unique education systems in comparison with others. In New Brunswick, there are two education systems and this depends on which language, English or French, the child studies. French is a compulsory subject in some Grades. For instance, in Toronto, it is compulsory to study French from grades four to nine in some schools.

The universities in Canada have a relatively high ranking in the world. According to the Academic Ranking of World Universities 2016, the University of

Toronto and the University of British Columbia rank 27 and 34 respectively. In the Global University Employability Ranking 2016, the University of Toronto and the McGill University rank 14 and 18 respectively.

Another crucial aspect of education is the quality of teaching. Notwithstanding the variations in teacher qualifications and standards from province to province, all provinces require teachers to have a license or certificate to teach in public elementary and secondary schools. Moreover, it is mandatory for teachers to have a bachelor's degree for teaching elementary grades and most require a bachelor's degree as the minimum preparation for teaching in secondary schools, while a few insist on five years' study or a master's degree. There are around 310,000 full-time teachers at primary and secondary levels and another 40,000 at universities and colleges.

In conclusion, the education system in Canada is more inclined to the US education system than the UK education system. Each state is given a good level of freedom in terms of the educational policies that it wants to implement and the direction that it wants to follow.

By Hugo Pang



POPULATION AND CLIMATE IN CANADA - ARE THEY LINKED?

We know about the snow - but what is Canada's climate like throughout the year? And does it affect the population and its distribution?

You may be surprised to hear that Canada's climate is not Arctic but variable; apart from in the north of the country, summers tend to be dry and hot, with temperatures reaching as high as 35 degrees.

So does climate influence population density? What we find is that most large cities are located in the south near to the US-Canadian border where it is warmest. On the west coast of Canada, British Columbia is densely populated due to the temperate climate, which is caused by warm air from the Pacific Ocean. It also experiences relief rainfall due to the surrounding Rocky mountains, so it doesn't experience much snow. This means that it is a prime location for vegetation to grow, and also offers a manageable climate for people to live all year round.

Over half of Canada's population live around the Great Lakes in the St Lawrence region on the border of the USA, despite it being the smallest geographical region in Canada. This is due to the moderate rainfall and it having the longest summers in Canada as it is closest to the equator. The summers tend to be very hot and winters very cold, However, the Great Lakes cool temperatures a little in the summer, and also raise temperatures in the winter, a result of stored heat from the summer making the climate more manageable.

The soil is highly fertile due to the lake having flooded at the end of the ice age when it filled with water from the Atlantic Ocean, laying down sediment in the soil. You might be surprised that in this part of Canada warm-weather crops such as tobacco, peaches and walnuts are grown, giving the Great Lakes a lot of economic potential. About 70% of the land is used for agriculture, making it the second largest farming region in Canada. The Lakes are also extremely useful; in the past 50 years 2 million metric tonnes of cargo worth \$375 billion have been transported from the St. Lawrence Seaway.

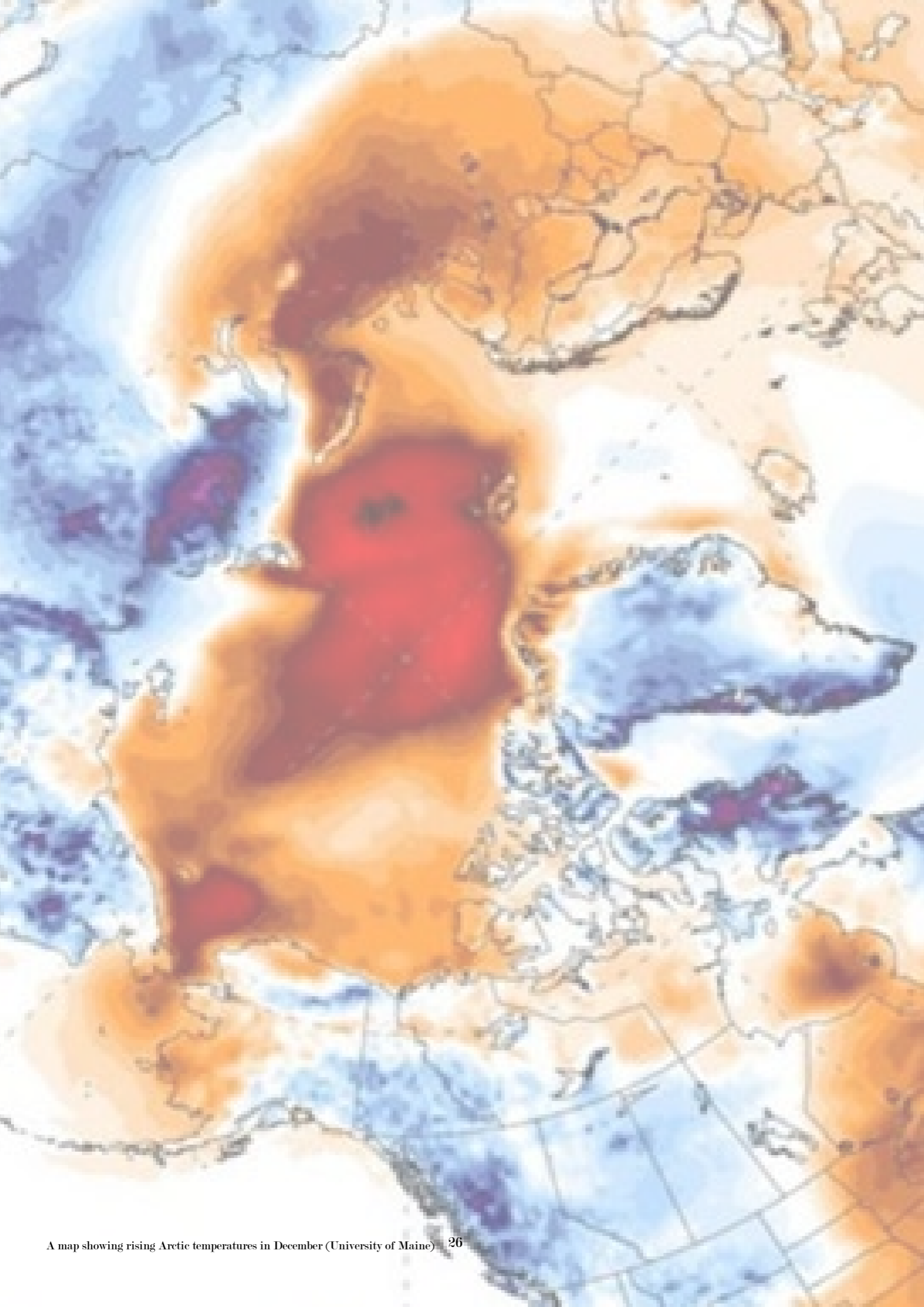
One of the lesser populated areas is Atlantic Canada with just 2.3 million people. It is a far from an ideal place to live due to the persistent fog during springtime and heavy snowfall in winter. Winter temperatures can be highly variable due to maritime air from passing storms replacing colder arctic air. Its population is now declining, since 2012 it has fallen by 0.4% a year, while Canada as a whole has witnessed population increase.

Southern Alberta occasionally experiences a Chinook, also known as the 'ice-breaker', which is a warm and dry wind from the Rocky mountains. Whereas winters are usually extremely cold with long periods of snow, this wind melts the snow in southern Alberta and also raises temperatures considerably. However, these winds can be as powerful as 170km/ph, which is greater than hurricane force. These weather conditions have contributed to a very low population, just 272,000 people in an area of 75,500 square kilometres.

Most other regions in Canada do experience what people think of as its typical cold and snowy winters, with lows of -25 degrees celsius. The northern parts of Canada tend to experience this type of weather for much of the year, with temperatures above freezing for just a few months each year. Much of northern Canada and some of the east is occupied by Boreal forest, which is the world's largest biome aside from oceans containing multiple ecozones, in the Canadian boreal region there are 8 identified ecozones and it is dominated by coniferous forest. Moreover, around 3 million square km has completely no development, making it the most intact forest in the world. The extensive Boreal region holds about 14% of Canada's population, including its aboriginal people and most of its rural populations.

So, yes - the climate has had a significant effect on population density in Canada. And not surprisingly, much as I love a week or so of snow when normal life stops, the idea of getting on with it day after day for months would certainly put me off living in the North.

By Francesca Bell



A map showing rising Arctic temperatures in December (University of Maine) 26

CANADIAN ARCTIC EXPERIENCES HOTTEST YEAR IN HUMAN HISTORY

2016 was the hottest year in human history according to climate scientists at the United Nations, it follows a worrying trend in climate patterns with 16 of the 17 hottest years falling within the 21st century.

Rising temperatures have had dangerous implications for the Canadian Arctic with one of the worst heat waves ever recorded with temperatures 5C higher than what is usually recorded during December. Dr. Friederike Otto from Oxford University's Environmental Change Institute described the heat wave as a 'once in 1000 year event.'

The most worrying effect of such high temperatures is the low sea ice coverage that results. Recent analysis by the National Snow and Ice Data Centre puts 2016 with 2007 as the two years of lowest ice coverage. The graph (see right) shows this winter to lie two standard deviations from the average, making it a one in less than 2% event.

One implication of such low ice coverage is the possibility is the opening up of the infamous 'Northwest Passage' a theorised shipping route from the east of America to Asia which was never used due to extensive pack ice. Last summer the first cruise ship navigated the route (pictured). It is hoped that one advantage of receding sea ice is that indigenous communities in Canada's Nunavut territory can profit from the increase in tourism.

By Joachim Harris

