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## ANTICIPATING FLASHPOINTS : THE UTILITY OF DEMPGRAPHIC TRENDING

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**JCSP 45**

***Exercice Solo Flight***

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DEMOGRAPHIC TRENDING**

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## ANTICIPATING FLASHPOINTS: THE UTILITY OF DEMOGRAPHIC TRENDING

*“Demography is Destiny”*

- Auguste Comte

### INTRODUCTION

Is this common saying from Auguste Comte valid? Do population trends truly determine the future of a state? Demography has long been hailed as “the most predictable of the social sciences.”<sup>1</sup> For this reason, there has been significant academic research done on the links between demography and security. In fact, in the early 1990s, Robert Kaplan argued that “anarchy of the crumbling of nation states will be attributed to demographic and environmental factors in the future.”<sup>2</sup> In more recent work, Henrik Urdal explains that there are certainly demographic *consequences* of war as evidenced by increased deaths and migration rates, however demographic factors can also be potential *causes* of conflict.<sup>3</sup>

There are a number of other authors who have corroborated some of these specific demographic cause factors,<sup>4</sup> but there are still many scholars who do not believe that demographic indicators can ever be used as a reliable means of forecasting upcoming regional conflict. Thus, there is room for further investigation of the utility of demographic trending. Moreover, within the limits of the information gathered as part of this research, there has not been any research done on qualifying the degree of outcomes

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<sup>1</sup> Jennifer Dabbs Sciubba, *The Future Faces of War: Population and National Security* (Santa Barbara, Calif: Praeger, 2011), 15.

<sup>2</sup> Robert Kaplan (as cited in Narottam Gaan, "Youth Bulge: Constraining and Reshaping Transition to Liberal Democracy in Afghanistan," *India Quarterly* 71, no. 1 (2015)18).

<sup>3</sup> Helge Brunborg and Henrik Urdal, "The Demography of Conflict and Violence: An Introduction," *Journal of Peace Research* 42, no. 4 (2005)371.

<sup>4</sup> Sciubba, *The Future Faces of War...*; Richard Cincotta, "Demographic Security Comes of Age," no. 10 (2004), 24-29. Christian Leuprecht, *Security Policies: Demographic Trends and International Security*, *Encyclopedia of Public Administration and Public Policy, Third Edition*. Taylor & Francis, 2015), 1-10.

(in terms of violence-levels) that may arise from the intersection of different demographic factors.

The benefit of demographic trending to identify potential international security risks has been recognized by the United States government and fits well with recent Canadian defence objectives. In a 1996 RAND study, Brian Nichiporuk stated:

The dynamics of population growth, settlement patterns, and movement across borders will have an effect on international security in the upcoming decades, and Washington can do much to solidify its geopolitical position in critical regions by anticipating demographic shifts that have security implications and by working with allies, friends, and international organizations to deal effectively with the cause.<sup>5</sup>

More recently, during a 2008 address at Kansas State University, then United States Central Intelligence Agency director, Michael Hayden, singled out world demographics as one of three trends that had his attention.<sup>6</sup> This United States interest coincides nicely with Canada's latest approach to defence. The Canadian government is seeking a range of initiatives to "ANTICIPATE and better understand potential threats to Canada and Canadian interests so as to enhance our [Canada's] ability to identify, prevent or prepare for, and respond to a wide range of contingencies."<sup>7</sup> So, furthering the research into pre-conflict demographic trending fits nicely into the Canadian government's security objectives.

In order to explore the concept of demographic predictability, it is best to look backward at historical conflicts that initiated by similar means, but had very different

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<sup>5</sup> Brian Nichiporuk, "The Security Dynamics of Demographic Factors," RAND Corporation and Arroyo Center, Vol. MR-1088 (Santa Monica, Ca: Rand, 2000)10.

<sup>6</sup> "The CIA Director on Demographics and Security." *Population and Development Review* 34, no. 3 (2008), 593-594.

<sup>7</sup> Canada, Department of National Defence, *Strong, Secure, Engaged: Canada's Defence Policy* (Ottawa: Department of National Defence,[2017]) 63.

outcomes. The Arab Spring conflicts in Northern Africa offer an excellent opportunity to test demographic ‘predictors’ since the uprising in most countries were a result of similar socio-political situations, but the outcomes were remarkably different. Thus, this paper seeks to answer the following research question: Through several case studies from the Arab Spring, is it possible to identify one or several demographic indicators that, more than others, are likely to explain the outbreak of such crises and their various outcomes? This essay will attempt to demonstrate that the presence and combination of a large youth bulge, high unemployment rates, high population imbalances, rapid urbanization and high birth rates can better explain and, to some extent, even anticipate the likelihood of major political instability and their security impact.

To investigate this research question and support this hypothesis, this essay is articulated around three main parts. Through a review of the specialized literature, the first part is designed to identify a series of demographic indicators usually associated with the eruption of domestic conflict that can be used as an evaluation framework for this paper. Made up of three case studies, the second part analyzes the Arab Spring in Tunisia, Egypt, and Libya through a demographic lens to determine, in each case and on the whole, which indicators are more likely to lead to violence. These three countries were chosen to represent the spectrum of violence that occurred stemming from a very similar social starting point. The third major section is a synthesis of the observations made and concludes with recommendations and avenues for further research.

## **I. DEMOGRAPHIC INDICATORS**

A number of scholars have done work in the field of demographic trending in conflict areas. One such author is Jack Goldstone who believes that population distortions

and their geographic distribution have the greatest effect on security.<sup>8</sup> In this regard, most scholars have focused on population proportions and rates versus absolute quantities.

After an extensive literature review, the following five key demographic indicators were identified: Youth bulge, population imbalance, urbanization rate, migration rate, and birth and fertility rate. The next section unpacks each demographic indicator one by one.

### **1.1. Youth Bulge**

Youth bulge is one of the most recurring criteria noted in research that is directly related to regional insecurity. As its name suggests, the youth bulge indicator is a percentage of youth compared to the rest of the population. The definition and measurement of youth bulges has not been consistent in academic research or in existing data sets. Some researchers consider youth aged 15 to 24, while others refer to 15 to 29 or even the entire population of under 30.<sup>9</sup> Moreover, some scholars identify youth bulges based on total population,<sup>10</sup> whereas others, like Henrik Urdal and the United Nations, identify youth bulges based on total adult population.<sup>11</sup> As Urdal explains, countries that have “continued high fertility will be underestimated because the large number of children deflates this youth bulge indicator.”<sup>12</sup> This research follows Urdal’s definition—youth aged 15-24 as a percentage of total adult population.

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<sup>8</sup> Michela Ceccorulli, Enrico Fassi and Sonia Lucarelli, "NATO's Demographic Paradox," *Global Change, Peace & Security* 29, no. 3 (2017)6.

<sup>9</sup> Maysoun Sukarieh and Stuart Tannock, "The Global Securitisation of Youth," *Third World Quarterly* 39, no. 5 (2018), 854-870.

<sup>10</sup> James Fearon and David Laitin, "Ethnicity, Insurgency, and Civil War," *American Political Science Review* 97, no. 1 (2003), 75-90.; Paul Collier and Anke Hoeffler, "Greed and Grievance in Civil War," *Oxford Economic Papers* 56, no. 4 (2004), 563-595.

<sup>11</sup> Henrik Urdal, "A Clash of Generations? Youth Bulges and Political Violence," *International Studies Quarterly* 50, no. 3 (2006), 607-629.

<sup>12</sup> *Ibid.*, 4.

Although the quantification is subjective, statistical research clearly shows a positive correlation between youth bulges and violent outbreaks. One of the first attempts to quantify the impact of youth bulges was by Cincotta, Engelman and Anastasion from Population Action International. In their 2003 study, these researchers found that “in the 1990s, states with a large youth bulge were nearly 2.5 times as likely to experience an outbreak of civil conflict as other states.”<sup>13</sup> In a more recent study, Hendrik Urdal identified a correlation between the relative size of the youth bulge and the risk of armed conflict.<sup>14</sup> Most developed countries have youth bulges around 17 percent of the adult population. However, Urdal found that “when youth make up more than 35 percent of the adult population, which they do in many developing countries, the risk of armed conflict would be 150 per cent higher than in countries with an age structure similar to most developed countries.”<sup>15</sup> Thus, research strongly suggests that the risk of armed conflict increases with the size of the youth bulge.

Cincotta and Leahy proposed another way of quantifying the risk of youth bulges using world-level demographics. Their research suggests that the odds of non-conflict countries with young age structures experiencing a new civil conflict during the next decade are one in four.<sup>16</sup> This statistic supports previous research while presenting the risks of unchecked youth bulges to the global community.

The dominant theory of why youth bulges lead to conflict hinges on the unmet needs of the youth population. When referring to youth demographics, the ex-CIA

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<sup>13</sup> Richard P. Cincotta et al., *The Security Demographic: Population and Civil Conflict After the Cold War* (Washington, D.C: Population Action International, 2003)2.

<sup>14</sup> Urdal, "A Clash of Generations? Youth Bulges...", 4. In 2000, developed countries averaged 17 percent of youth compared to the adult population.

<sup>15</sup> *Ibid.*

<sup>16</sup> Richard P. Cincotta and Elizabeth Leahy, "Population Age Structure and its Relation to Civil Conflict: A Graphic Metric," *Environmental Change and Security Program Report*, no. 12 (2006)1.

Director explained that “if their basic freedoms and basic needs—food, housing, education, employment—are not met, they could be easily attracted to violence, civil unrest, and extremism.”<sup>17</sup> This basic explanation is corroborated by numerous scholars.<sup>18</sup> In fact, although not explicitly a demographic indicator, unemployment is so highly linked to youth bulges that it has been considered as a subset to the youth bulge indicator.

When basic needs are not met there are still other factors that are typically required to spark conflict. These other factors all hinge around different types of segmentation. Samuel Huntington explains that generational consciousness does not form a strong enough identity marker to spark conflict, but when coupled with other forms of social segmentation, the risk of violence increases.<sup>19</sup> Indeed, Anton Minkov from Defence Research and Development Canada explains that the absence of political venues for voicing grievances and the exposure to a revolutionary ideology are key to causing political instability.<sup>20</sup> With the growing accessibility of the internet, these revolutionary movements are often fueled by youth affinity for social media.<sup>21</sup> Thus, this entire section illustrates that large youth populations with unmet basic needs who experience strong feelings of segmentation will almost certainly lead to some form of conflict.

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<sup>17</sup> "The CIA Director on Demographics and Security."... 2

<sup>18</sup> Richard P. Cincotta, "Half a Chance: Youth Bulges and Transitions to Liberal Democracy," Environmental Change and Security Program Report, no. 13 (2008); Henrik Urdal, "A Clash of Generations..."; Jack A. Goldstone, Monty G. Marshall and Hilton Root, "Demographic Growth in Dangerous Places: Concentrating Conflict Risks," International Area Studies Review 17, no. 2 (2014); Akram Alfy, "Rethinking the Youth Bulge and Violence," (2016).

<sup>19</sup> Samuel P. Huntington, *The Clash of Civilizations and the Remaking of World Order* (New York: Simon & Schuster, 1996)261.

<sup>20</sup> Anton Minkov, Defence R&D Canada. Centre for Operational Research and Analysis and Canada. Dept. of National Defence, *The Impact of Demographics on Regime Stability and Security in the Middle East: A Conceptual Framework* (Ottawa: Centre for Operational Research and Analysis, Defence R&D Canada,[2009]).

<sup>21</sup> Nichiporuk, "The Security Dynamics of..." 59.



## 1.2. Population Imbalance

The two types of population imbalance that were noted in this literature review were age-based and sex-based imbalances. Age-based population imbalance is thought to be another source of tension in many states that could lead to social unrest. Unlike youth bulges, this imbalance captures the security risks generated when the population distribution of a certain state is heavily skewed. Most often, this is evident by very old populations. This is predominantly due to social cohesion and economic fears that the working population will not be able to support the retired population.<sup>22</sup> Christian Leuprecht from Queens University explains that “if the strain on governments' resources caused by the cost of aging populations becomes sufficiently great, it has the potential to exacerbate systematically both the number of fragile states and the extent and depth of that fragility.”<sup>23</sup> Indeed, it is these strains and stresses from an imbalanced population pyramid that become potential flashpoints for conflict.

In addition to age-based population imbalances, another proven demographic contributor to violence is a sex-based imbalance or, more commonly called, a high sex ratio. This implies that there is an over-abundance of males compared to females. Richard Cincotta uses a number of historic accounts to illustrate that “populations with a high sex ratio are more vulnerable to political unrest and civil conflict.”<sup>24</sup> Sex ratios generally fluctuate between 103 and 110.<sup>25</sup> Social research demonstrates that men tend to resort to violence more than women. Archer’s research shows that “all over the world, young men

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<sup>22</sup> Richard Cincotta, "Demographic Security Comes...".

<sup>23</sup> Christian Leuprecht, "International Security Strategy and Global Population Aging," *Journal of Strategic Security* 3, no. 4 (2010)10.

<sup>24</sup> Cincotta, "Demographic Security Comes...", 3.

<sup>25</sup> John Robert Weeks, *Population: An Introduction to Concepts and Issues*, 12th ed. (Boston, Mass: Cengage Learning, 2016).

(in this case defined as aged 15 to 34) are responsible for more than three-quarters of violent crimes.<sup>26</sup> One explanation for this imbalance is that women naturally seek genuine non-violent reconciliation for their children's sake.<sup>27</sup> This has been corroborated by several other studies, which suggest that, women can help deter violence and further enhance the democratic progress of a troubled state.<sup>28</sup> Regardless of rationale, most sociologists agree that a reasonable balance of the sexes is important for regional stability.

### 1.3. Migration Rate

Another form of instability—to both destination and origin countries—comes from high migration rates. On the destination (immigration) side, migrants “aren’t necessarily fleeing something in particular but moving toward something better.”<sup>29</sup> Thus, several authors explain that conflicts often result with the movement of large masses of people with varying cultural and religious beliefs.<sup>30</sup> To be clear, this instability is caused by the rate of migration that overwhelms social balances, as there is an extensive body of research that shows that, under normal conditions, community crime levels are either lower or unaffected by immigration.<sup>31</sup>

On the origin (emigration) side, the single biggest problem is brain drain. Elena Holodny explains that “millennial-aged workers are leaving their home countries in

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<sup>26</sup> Archer, 1994, As cited in Cincotta et al., *The Security Demographic: Population...*

<sup>27</sup> Julie Cupples, "Counter-Revolutionary Women: Gender and Reconciliation in Post-War Nicaragua," *Gender & Development* 12, no. 3 (2004).

<sup>28</sup> Udi Sommer, "Women, Demography, and Politics: How Lower Fertility Rates Lead to Democracy," *Demography* 55, no. 2 (2018).

<sup>29</sup> "3 Demographic Trends Changing our World," , accessed Apr 27, 2019, <http://pew.org/2a9w7c0>.

<sup>30</sup> RAND Corporation, "Demographics and the Changing National Security Environment," , accessed Apr 27, 2019, [https://www.rand.org/pubs/research\\_briefs/RB5035/index1.html](https://www.rand.org/pubs/research_briefs/RB5035/index1.html).

<sup>31</sup> Ben Feldmeyer et al., "Immigration, Collective Efficacy, Social Ties, and Violence: Unpacking the Mediating Mechanisms in Immigration Effects on Neighborhood-Level Violence," *Race and Justice* 9, no. 2 (2019).

droves, hoping to find better opportunities in developed European markets.”<sup>32</sup> Christian Leuprecht explains that high emigration is a concern because most migrants are between 15 and 35 years old.<sup>33</sup> He suggests that this group “reap the greatest long-term payoff from migrating and they have the least to lose from being uprooted.”<sup>34</sup> A high emigration rate is usually indicative of uncontrolled migration flows “due to factors such as land overuse, environmental degradation, resource scarcity, famine, or localized communal violence.”<sup>35</sup> Unfortunately, this is a slippery slope as countries with high emigration rates tend to be losing their main economic potential that only exacerbates the stability of the state. Malnar also notes that natural reproduction rates tend to decrease in these circumstances as the reproductive age population is either emigrating or reluctant “to have children in the given circumstances.”<sup>36</sup> So, high emigration rates are a significant concern for international security.

#### **1.4. Urbanization Rate**

The rate at which urban cities are growing is also a critical demographic stress indicator that may increase regional conflict. Several authors have done research that confirms that conflict is increasing in urban areas.<sup>37</sup> Based on data from the 1990s, Richard Cincotta claims that “countries with a high rate of urban population growth were

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<sup>32</sup> Elena Holodny, "These Mini-Charts Explain One of the Biggest Global Demographic Trends," last modified 14 Apr, accessed Apr 27, 2019, <https://www.weforum.org/agenda/2016/04/these-mini-charts-explain-one-of-the-biggest-global-demographic-trends/>.

<sup>33</sup> Christian Leuprecht, "International Security Strategy and Global Population Aging," *Journal of Strategic Security* 3, no. 4 (2010)16.

<sup>34</sup> *Ibid.*

<sup>35</sup> Nichiporuk, “The Security Dynamics of...” 35.

<sup>36</sup> Dario Malnar and Ana Malnar, "Demographic Security Trends in Southeastern Europe," *Croatian International Relations Review* 21, no. 73 (2015)58.

<sup>37</sup> John de Boer, Markus Gottsbacher and Jennifer Erin Salahub, *Social Theories of Urban Violence in the Global South: Towards Safe and Inclusive Cities* (Milton: Routledge Ltd, 2018). Clionadh Raleigh, "Urban Violence Patterns Across African States," *International Studies Review* 17, no. 1 (2015).

about twice as likely as other states to experience an outbreak of civil conflict.”<sup>38</sup> In further research for the United Nations Population Division, Cincotta has determined a correlation between the urbanization rate and the likelihood of an outbreak of civil conflict. In this research, countries with urbanization rates estimated between 1 and 4 percent are at a medium demographic stress category.<sup>39</sup> Countries greater than 4 percent are considered high risk and greater than 5 percent are extremely high risk.<sup>40</sup>

The causes for these increases in conflict are similar to those for immigration and youth bulge. As urbanization rates increase, job markets are flooded, inter-ethnic competition is exacerbated, the availability of existing services drops and basic infrastructure is tested.<sup>41</sup> In addition, as youth often make up a disproportionately large part of rural-to-urban migrants, the same causal factors tied to youth bulges increase the risk of political unrest.<sup>42</sup> This intersectionality is one reason why it is important to consider demographic factors in combination.

### **1.5. Fertility and Birth Rates**

Increased fertility and birth rates have been found to be strong indicators of civil conflict. Cincotta claims that the “likelihood of civil conflict decreased consistently as countries’ birth rates declined.”<sup>43</sup> There are several theories about why this is the case. The main theory for this is that “lower fertility entails changes in family structure, which lead to changes in political behavior in a way that is conducive to a democratic form of

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<sup>38</sup> Cincotta, "Demographic Security Comes...", 2.

<sup>39</sup> Cincotta et al., *The Security Demographic: Population...*

<sup>40</sup> *Ibid.*

<sup>41</sup> *Ibid.*

<sup>42</sup> Henrik Urdal, "A Clash of Generations? Youth Bulges and Political Violence," *International Studies Quarterly* 50, no. 3 (2006), 607-629.

<sup>43</sup> Cincotta, "Demographic Security Comes...", 2.

government.”<sup>44</sup> Another theory hinges around women as violence diffusers since “countries where fertility rates are high have fewer women in leadership positions.”<sup>45</sup> This links to the identification of high sex ratios as contributors of increased violence.

Tied very closely to fertility rate is the actual birth rate of nations, which have also been shown to relate to conflict. Based on data captured between 1985 and 2000, Cincotta found a direct relationship between the birth rate and the likelihood of an outbreak of conflict.<sup>46</sup> Countries with birth rates of 25 births per 1000 people were 19% more likely to experience conflict than countries with birth rates less than 15 births per 1000 people.<sup>47</sup> If the birth rates rose to 45 or more births per 1000 people, then the likelihood of conflict rose to 38%.<sup>48</sup> Therefore, the monitoring of both fertility and birth rates is important.

### **1.6. Other Possible Indicators**

There are a number of other possible demographic indicators that have been proposed, but were not considered as part of this study. Cincotta proposed that countries with high death tolls linked to HIV/AIDS were more susceptible to violent conflict.<sup>49</sup> He also suggested that declining availability, on a per capita basis, of cropland and fresh water would increase the likelihood of violence.<sup>50</sup> Additionally, there have been links drawn between high youth ratios and high education levels. Indeed, Hannes, has found that “the combination of growing youth cohorts and educational expansion often leads to

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<sup>44</sup> Friedrich Breyer and J.-Matthias Graf von der Schulenburg, "Family Ties and Social Security in a Democracy," *Public Choice* 67, no. 2 (1990).

<sup>45</sup> Sommer, "Women, Demography, and Politics: How...", 563.

<sup>46</sup> Cincotta et al., *The Security Demographic: Population...*, 12.

<sup>47</sup> *Ibid.* See Table 2.1 in this reference for more specific quantified details.

<sup>48</sup> *Ibid.*

<sup>49</sup> *Ibid.*

<sup>50</sup> *Ibid.*

increased political violence even in the presence of low youth unemployment.”<sup>51</sup> This has been corroborated by others including Dan LaGraffe, a Presidential Management Fellow in the Office of the United States Secretary of Defense.<sup>52</sup> These indicators were loosely evaluated based on data from the United Nations Population Division and it was determined that they were not worthy of more detailed consideration.

### 1.7. Summary

This literature review has identified a number of critical demographic factors that must be considered as part of the case study analysis. Table 1 highlights all key demographic indicators ordered by relative importance. It also provides quantitative arcs for the risk ratings of some demographic indicators that were found in existing research.

**Table 1. Summary of Key Demographic Indicators**

Demographic Indicator	Risk Ratings	
	Very Low	Very High
Youth Bulge Unemployment	<17%	>35%
Population Imbalance Age imbalance Sex imbalance		
Migration		
Urbanization	<1%	>4%
Fertility and Birth Rates Fertility Rates Birth Rates	<15 births per 1000 people	>45 births per 1000 people

Note: Indicators are listed by relative importance along with specific quantitative risk ratings from the existing research discussed above.

<sup>51</sup> Hannes Weber, "Age Structure and Political Violence: A Re-Assessment of the "Youth Bulge" Hypothesis," *International Interactions* 45, no. 1 (2019), 80.

<sup>52</sup> Dan LaGraffe, "The Youth Bulge in Egypt: An Intersection of Demographics, Security, and the Arab Spring," *Journal of Strategic Security* 5, no. 2 (2012).

## II. CASE STUDY ANALYSIS

Three countries were evaluated based on the above-mentioned demographic indicators. Research data for these case studies were taken from the CIA World Factbook, the United Nations Population Division, and the World Bank databases in 5-year increments between 2005 and 2015. Based on the quantitative data, qualitative assessments were made on a 5-point scale from 0 to 4. Here, 0 was considered very low, 1 was considered low, 2 was considered medium, 3 was considered high, and 4 was considered very high risk of conflict. The timeframe of greatest interest was the year 2010 as this was the turning point leading into the Arab Spring. However, considerations were also made for positive or negative trending leading into 2011. The following sections review the violence level of each country along with highlights of the demographic findings.

### 2.1. Tunisia

On the spectrum of revolutionary violence, the Arab Spring demonstrations in Tunisia are considered the low-violence case. This classification does not in any way wish to undermine the fact that there were numerous human security violations by authorities who were attempting to break up the public demonstrations. The worst of which was live firing into the public demonstrations by police on order from then-President Zine El Abidine Ben Ali.<sup>53</sup> At the end of the Tunisian revolution the UN estimates that there were 219 deaths.<sup>54</sup> This number is relatively low compared to many other countries involved in the Arab Spring revolutions.

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<sup>53</sup> For additional details on the Tunisia human securities violations, see Amnesty International, MDE 30/011/2011 - Tunisia in Revolt, State Violence during Anti-Government Protests, (2011).

<sup>54</sup> Mark Leon Goldberg, *Arab Spring Facts and Figures*, UN Dispatch, 2011, <https://www.undispatch.com/arab-spring-facts-and-figures/>.

Leading into the revolution timeframe, Tunisia saw two medium demographic risk indicators. First, Tunisia had a decent sized youth bulge of 24.4% of the adult population, which was noticeably higher than the 17% of most developed countries, but remained lower than the 35% threshold proposed by Urdal. Using a linear scale, where below 17% was very low risk and above 35% was very high risk, this put Tunisia at a medium risk of conflict. Second, at 14%, Tunisia had a high unemployment rate, which compared to world average rates, was assessed as a medium risk.

Meanwhile, Tunisia experienced a number of low risk demographic indicators leading into 2011. Tunisia had a noticeable age imbalance in its population pyramid. Tunisia also experienced a slight increase in emigration rate to 0.38 migrants per 1000 population. This placed Tunisia at 138 of 221 countries evaluated by the CIA World Factbook.<sup>55</sup> This is judged to be a low risk for brain drain and other migration effects since the overall migration rate remains negative. Also, Tunisia had a higher than normal urbanization rate of 1.70%,<sup>56</sup> which placed it in a low risk category. All other demographic indicators for Tunisia were rated as very low risk.

## **2.2. Egypt**

The Arab Spring uprisings against then-Egyptian President Hosni Mubarak are considered to be an example of a medium-violence conflict on the relative violence scale of all Arab Spring conflicts. The United Nations estimates that the conflict caused 846 deaths and more than 6000 injuries.<sup>57</sup> Most of the violence and death has been attributed to President Mubarak's security forces that fired live ammunition into the upper bodies of

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<sup>55</sup> Central Intelligence Agency, "World — the World Factbook ," (Apr 11, 2019). <https://www.cia.gov/library/publications/the-world-factbook/geos/xx.html>.

<sup>56</sup> Central Intelligence Agency, "World..."

<sup>57</sup> Goldberg, *Arab Spring Facts and Figures...*



protestors in the crowds.<sup>58</sup> Clearly, killing citizens is extreme violence; however, given that the overall death-toll remained relatively low, Egypt is still considered to have been a medium-violence conflict.

In the 2010 timeframe, Egypt was experiencing a noticeable youth bulge that caused it to be in the high-risk category for violent conflict. Using 2010 data from United Nations Population Division, Egypt had a 29.9% youth bulge ratio,<sup>59</sup> which was at the high end of the spectrum developed by Urdal. Thankfully, the unemployment rate in Egypt at the time was 9.70%.<sup>60</sup> Although slightly high, this unemployment rate placed Egypt as a low risk and was, presumably, enough to keep youth gainfully employed. This implies that Egypt was ripe with youth, but capitalizing on the economic benefits of a large youth population.

Leading into the Arab Spring, there were several demographic factors that were considered a medium risk for Egyptian conflict. There was a decent age imbalance in that 22.2% of their total population was less than 14 years old.<sup>61</sup> This aligns with the other two low risk factors—fertility and birth rates. The fertility rate of 3.01 children per female is judged to present a medium risk of conflict as it is higher than the net replacement ratio on an already stressed population pyramid. Also, Egypt had birth rates of 25.02 children per 1000 population, which implies a 24% higher chance of conflict.<sup>62</sup>

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<sup>58</sup> Amnesty International, MDE 01/001/2012 - Middle East and North Africa: Year of Rebellion: The State of Human Rights in the Middle East and North Africa (Amnesty International,[2012]).

<sup>59</sup> United Nations Population Division, "World Population Prospects - Data Query," (2017). <https://population.un.org/wpp/DataQuery/>.

<sup>60</sup> Central Intelligence Agency, "World..."

<sup>61</sup> "Population Pyramids of the World from 1950 to 2100," , accessed May 1, 2019, <https://www.populationpyramid.net/world/2017/>.

<sup>62</sup> Cincotta et al., *The Security Demographic: Population...*, 12.

In addition to its unemployment ratings, Egypt's sex ratio, high emigration rates and rapid urbanization rates suggested a low risk of impending violence. Although Egypt's average sex ratio of 1.03 is considered normal compared to the rest of the world, it was rated as a low risk. This is because there is still a higher percentage of males in a very young population. Finally, Egypt's emigration rate was 0.21 per 1000 population and it had a 1.80% urbanization rate,<sup>63</sup> which placed it in a low risk category for similar reasons to Tunisia.

### **2.3. Libya**

The First Libyan Civil War that was initiated by the Arab Spring is considered to be a highly violent conflict. This conflict began with such violent human security issues that the United Nations Security Council quickly adopted Resolution 1970 to intervene on the basis of Chapter VII violations.<sup>64</sup> In addition, a NATO-led coalition deployed to the region to protect civilians from Colonel Mu'ammarr al-Gaddafi's atrocities.<sup>65</sup> Although there is uncertainty surrounding the final death toll, most sources estimate that there were at least 3000 deaths.<sup>66</sup> In fact, civil war in Libya is ongoing and has very recently flared up into an extremely volatile security situation with over 300 casualties in the past month.<sup>67</sup> Consequently, the high-violence continues to demand significant international attention and support.

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<sup>63</sup> Central Intelligence Agency, "World..."

<sup>64</sup> United Nations Security Council, United Nations Security Resolution 1970,[2011]).

<sup>65</sup> Amnesty International, MDE 01/001/2012 - Middle East and North Africa: Year of Rebellion: The State of Human Rights in the Middle East and North Africa, Amnesty International,[2012]).

<sup>66</sup> Goldberg, *Arab Spring Facts and Figures...*

<sup>67</sup> Charley Yaxley, "42,000 Libyans Now Displaced by Tripoli Clashes, UNHCR among those Providing Aid," , accessed May 1, 2019, <https://www.unhcr.org/news/briefing/2019/4/5cc80ab74/42000-libyans-displaced-tripoli-clashes-unhcr-among-providing-aid.html>.

For Libya, the highest demographic risk indicator in 2010 was the unemployment ratio. There were some conflicting data for this indicator as the United Nations Population Division estimated that the unemployment rate in Libya was at 30.00% in 2005, 2010 and 2015. A more reliable estimate of 18.40% came from the International Labour Organizations Statistics database.<sup>68</sup> This ratio, still within the highest in the world, was assessed as a high risk.

Libya had several medium risk factors, namely: high youth bulge, high age-imbalance, high sex ratio, high rate of urbanization, high fertility rates, and high birth rates. These demographic indicators were very similar to Egypt's, with the exception of three outliers. First, Libya has a much larger bulge in the middle of its population pyramid than Egypt; however, as shown in the appendix, the bulk of that bulge was just over the youth bulge cut-off. As a result, the 28.0% youth bulge puts Libya in the medium risk category. Second, Libya had a 1.06 sex ratio. At the time, this was the highest of all three countries and suggested a medium risk of conflict. Third, the Libyan urbanization rate of 2.20% was also the highest of all three countries. These three distinctive factors are of great interest to this research and will be discussed more in the following section.

#### **2.4. Comparison**

The analysis of the above cases clearly shows several risks of conflict, but the preponderance for violence is not entirely evident until the results are compared against each other. Table 2 illustrates a health chart<sup>69</sup> based on the qualitative five-point ratings

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<sup>68</sup> "Population Pyramids of the World from..."

<sup>69</sup> A health chart is a method of visualizing patterns—in this case, the risk of violent conflict. The chart is colour-coded to match the five-point risk of violence scale where red is very high risk, orange is high risk, yellow is medium risk, light green is low risk, green is very low risk.

described at the beginning of this section. The health chart shows that the demographic indicators correlated quite well with the degree of violence seen in each of the three case studies. This will be further discussed in the next section.

**Table 2 – Demographic Health Chart**

Demographic Stress Indicator	Country		
	Libya	Egypt	Tunisia
Large Youth Bulge	2	3	2
Increased Unemployment Rate	3	1	2
Age Imbalance	2	2	1
High Sex Ratio	2	1	0
Increasing Migration Rate	1	1	1
Rapid Urbanization	2	1	1
High Fertility Rate	2	2	0
High Birth Rate	2	2	0

Degree of violence (High to Low) →

Note: This chart compares demographic indicators of all three cases by colour-coding the five-point system. Numbers indicate the quantitative rating.

### III. OBSERVATIONS, RECOMMENDATIONS AND CONCLUSION

#### 3.1. Observations

When comparing the cases, it becomes immediately clear that there is some merit to demographic trending. The five-point scale coupled with the demographic health chart has offered a simple and quick evaluation of regional security risks. This visualization method has also illustrated the benefit of multi-variable characterization in that the more demographic indicators, the easier it is to see trends.

It is important to note that this research aligned better with the degree of violence than the Fragile States Index (FSI) developed by The Fund for Peace. This index,

originally to be used as a validation source, ranked the FSI for Tunisia, Egypt and Libya as 67.5, 87.6 and 69.1 respectively.<sup>70</sup> The higher the FSI, the higher the likelihood of conflict, therefore at the time of the Arab Spring, Egypt was considered the most likely to have conflict followed by Libya and then Tunisia. This will be revisited in the recommendations section.

This research supports the already existing bank of literature that highlights youth bulges as the strongest indicator of conflict. Governments must be extremely cautious when there is an overabundance of youth because any number of socio-economic triggers—especially high unemployment rates—could become flashpoints for conflict. Also, the numbers show that having a rapid urbanization rate or a high sex ratio will also exacerbate the risk of conflict. In other words, since it must be coupled with other factors, a large youth bulge is not a sufficient cause of conflict but remains the most important driver.

The data show that there was no significant increase in migration rates leading into the conflict. All three countries exhibited very small emigration rates, but the granularity of the demographic data (one-year increments) was not sufficient to signal impending conflict. In all cases emigration rates increased significantly post-2011; however, this was not evident leading into the conflict. Since the net migration rates in all three cases were negative within plus or minus five years of the conflict, this study was unable to observe any specific trends relating to immigration. Therefore, emigration rates do not appear to be a valid indicator of impending conflict, but immigration rates could not be studied in this research.

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<sup>70</sup> The Fund For Peace, "Fragile State Index," (2018). <https://fragilestatesindex.org/country-data/>.

The data show that birth rates and fertility rates tend to follow each other. In other words, there may not be any value in tracking both. In this case, the birth rate was the dominant variable as it was easily characterized by the work of Cincotta.<sup>71</sup> The assessment of fertility rates was secondary and more subjective. It was still very quick to capture fertility rates, but in order to be more effective, additional research needs to be done to quantify risk for conflict based on number of children per female.

### **3.2. Recommendations**

Demographic trending and targeting should be well integrated into Canada's international relations strategy in order to guide early diplomatic and economic intervention efforts. By working with its allies and partners, the Canadian government can seek to influence policies and programs in higher risk countries to avoid the potential of future costly military deployments. Targeting specific foreign aid to influence demographic changes offers the best chances of preventing conflict and maintaining international peace and security.<sup>72</sup> Given the high confidence in the youth bulge and associated factors being the single biggest conflict predictor, the priority for these pre-conflict intervention mechanisms should be placed on the youth bulge, unemployment, sex ratios and urbanization. After this, government officials should look at encouraging support for demographic policies that will slow population growth, square population imbalances and reduce birth rates closer to net replacement values.

The Canadian government should boost its focus on gender mainstreaming and work to influence the international community. In particular, Canada should continue to support improvement in the legal, educational and economic status of women to

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<sup>71</sup> Cincotta et al., *The Security Demographic: Population...*

<sup>72</sup> Nichiporuk, "The Security Dynamics of..."

“influence social environments, help change cultural norms, and ultimately speed up demographic transition.<sup>73</sup> This can be done in a variety of ways, but the increased commitment towards the various United Nations Security Council Resolutions<sup>74</sup> is likely to yield the best buy-in from the international community.

Since demographic factors are not the only contributors that can lead to civil conflict and security issues, strategic planners should also consider adding more factors known to contribute to political conflict. By combining demographic characteristics with non-demographic factors such as historic ethnic tensions, unresponsive governance and ineffective institutions, the net risk of conflict will increase significantly.<sup>75</sup> Likewise, factors such as income inequality and regional radicalization should be added to increase the robustness of trending.

Linked to the above recommendation to broaden the number of variables, further research should be done on the FSI and particularly its demographic variables calculation. As discussed in the observations section, the FSI was used as a validation source; however, it did not correlate with the actual propensity for violence. In fact, the S1 "demographic pressures" variable showed improving scores leading into and out of the Arab Spring and should therefore be re-evaluated.<sup>76</sup>

This study has highlighted that there is still a broad range of opportunities for social scientists to carry out detailed research to quantify the impact of demographic indicators on the probability of political conflict. Additional studies to quantify the effects of sex ratio, migration rates, and fertility rates would have helped avoid some

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<sup>73</sup> Cincotta et al., *The Security Demographic: Population...*, 15.

<sup>74</sup> Such as UNSCR 1325.

<sup>75</sup> Cincotta et al., *The Security Demographic: Population...*, 13.

<sup>76</sup> The Fund For Peace, "Fragile State Index..."

unnecessary subjectivity. They would also help strengthen the integrity of the demographic research to boost world leader confidence in the utility of demographics to forecast looming security issues.

The concept of demographic trending is a diplomatic long-term strategy; however, at the Operational level, the Canadian Armed Forces should continue to work with its allies to “include demographic data and projections in area studies, operational environment forecasts, and other security and threat assessments.”<sup>77</sup> Moreover, the military should strive to develop basic demographic analysis skills throughout its intelligence community. This ensures that Canadian intelligence specialists are capable of interpreting and validating demographic data from other international intelligence sources.

Finally, The Canadian government and the international community should consider further research into the integrity of this simple modelling technique. The demographic factors detailed above were run against Eastern Africa<sup>78</sup> and there were a number of countries that appear to be susceptible to impending conflict. These countries, in order of concern, are: Somalia, South Sudan, Uganda, Malawi, Ethiopia, Mozambique, Burundi and Rwanda. As shown in table 3, out of the 18 countries evaluated, each of these have a minimum of three very high or high-risk indicators. All countries have very large youth bulges and high urbanization rates. They all also have very high birth rates that indicate possible conflict according to table 1 parameters. Somalia and South Sudan are of most concern because they both have fairly high unemployment rates. Lastly,

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<sup>77</sup> Cincotta et al., *The Security Demographic: Population...*, 15.

<sup>78</sup> Eastern Africa was chosen because the data was readily available and this was a reasonable population size to evaluate in a short time-period.



South Sudan has a higher sex ratio than average, which is also a notable concern. This quick analysis does not imply that these countries will fall into immediate conflict. However, it does suggest that these countries warrant further investigation and it illustrates the ease at which demographic trending can be applied.

**Table 3. East African Health Assessment**

Country	Youth Bulge Per Adult Population	Birth Rate	Urbanization Rate	Unemployment rate	Sex Ratio (M/F)
	A	B	B	C	B
Somalia	4	3	3	2	1
South Sudan	3	3	3	2	2
Uganda	4	4	3	0	1
Malawi	4	3	4	0	0
Ethiopia	4	3	3	0	1
Mozambique	4	3	3	0	0
Burundi	3	3	4	0	1
Rwanda	3	3	3	0	1
United Republic of Tanzania	4	0	3	0	1
Eritrea	3	0	4	0	1
Zambia	4	3	2	0	1
Djibouti	3	0	2	1	1
Kenya	3	3	2	1	0
Madagascar	3	3	2	0	1
Comoros	3	0	2	0	1
Zimbabwe	3	0	2	0	1
Mauritius	1	0	0	0	2
Seychelles	0	0	2	0	1

Data Sources: A – United Nations Population Division, "World Population Prospects - Data Query," (2017). <https://population.un.org/wpp/DataQuery/>.

B – Central Intelligence Agency, "World — the World Factbook ," (Apr 11, 2019). <https://www.cia.gov/library/publications/the-world-factbook/geos/xx.html>.

C – World Bank, Unemployment Rates,[2019]. <https://data.worldbank.org/indicator/sl.uem.totl.zs>

Note: Age imbalance was not evaluated in this exercise due to a lack of time to compare the population pyramids. Fertility rate was not evaluated due to its subjectivity.

### 3.3. Conclusion

This report has reinforced existing research into the value of demographic trending for international security. It has found that a large youth bulge, high

unemployment rate, large age imbalance, high sex ratio, high urbanization rate, high fertility rate and high birth rate offer a sound foundation for basing demographic predictions of conflict. In addition, it has offered a simple five-point quantitative health comparison chart that characterizes the potential of violent outcomes based on the aggregated data. This has been proven using the three case studies of Tunisia, Egypt and Libya that all started with similar Arab Spring conditions but had very different outcomes.

The research of demographic influences on regional security is not new, but does not appear to be gaining traction with government authorities. Cincotta and Goldstone suggest that “demographic risk factors for conflict are clearly demonstrable, but often lose ground to a country’s pressing political and social concerns.”<sup>79</sup> This research paper provides additional data to inspire government action through improved stewardship of international stability funding.

It is important to highlight that most social scientists agree that “there is no direct cause-and-effect relationship between demographics, conflict, and governance.”<sup>80</sup> This does not obviate the utility of demographic trending and only warns authorities that there is a larger range of error on any demographic predictions. This paper supports Auguste Comte’s claim that “demography is destiny”. It may not be an exact science, but demographic health charting certainly highlights potential flashpoints that need to be seriously considered by world leaders.

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<sup>79</sup> Cincotta and Goldstone, “The Security Demographic: Assessing the Evidence,” *Environmental Change and Security Program Report*, no. 12 (2008)78.

<sup>80</sup> Elizabeth Leahy, “Beginning the Demographic Transition: Very Young and Youthful Age Structures,” *Environmental Change and Security Program Report*, no. 13 (2008)1.

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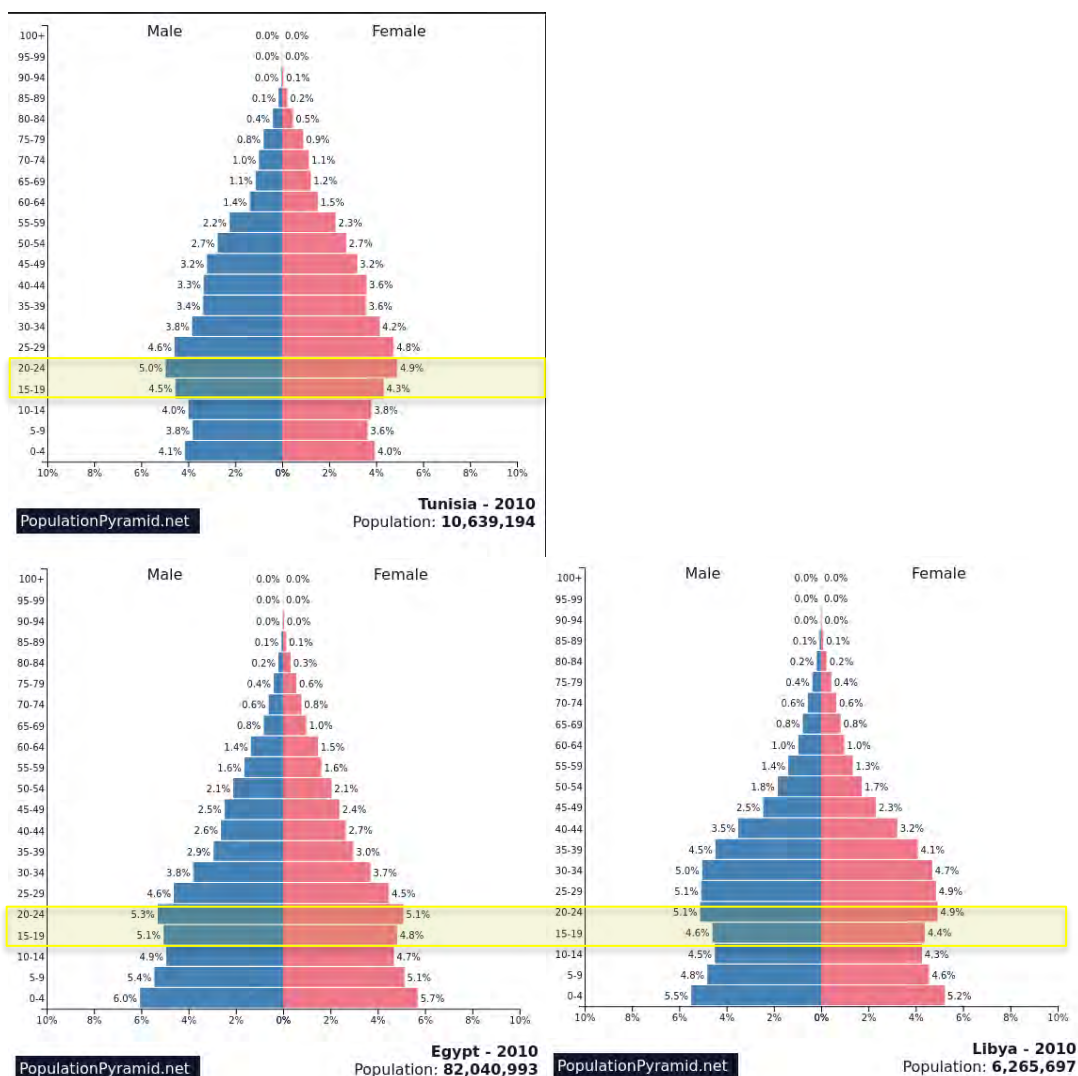
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## Appendix – Population Pyramids



**Figure A1. Population pyramids for Tunisia, Egypt and Libya from 2010.**

Source: PopulationPyramid.net, "Population Pyramids of the World from 1950 to 2100."  
Accessed 1 May 2019. <https://www.populationpyramid.net/>

Note: The yellow box compares the size of youth bulges and shows how Libya, in particular, has a very large bulge just above of the United Nations definition.