A Comparison Analysis Between the State of Georgia and Israel: Heath Outcome Disparities of Low Birth Weight Infants

Dionne Spears

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A COMPARISON ANALYSIS BETWEEN THE STATE OF GEORGIA AND ISRAEL:

HEALTH OUTCOME DISPARITIES OF LOW BIRTH WEIGHT INFANTS

BY

DIONNE SPEARS

April 4, 2017

ABSTRACT

Despite the United States having the largest national expenditures on health care in the world, Israel outranks the U.S. in infant health outcomes. In the past 20 years, Israel's neonatal health outcomes have improved rapidly in part by providing universal access to care to all citizens. Israel is not without its maternal health challenges, although the state of Georgia has a weak maternal health infrastructure, a high number of uninsured women, and infant health outcomes poorer than the U.S. aggregate mean. Georgia provides less equitable healthcare to women and as a result has stark neonatal differences between populations.

Keywords: Maternal & Infant health outcomes; Low Birth-weight; Israel; Health Disparities; United States; State of Georgia
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HEALTH OUTCOME DISPARITIES OF LOW BIRTH WEIGHT INFANTS

BY

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B.A., KENNESAW STATE UNIVERSITY

A Capstone Submitted to the Graduate Faculty of Georgia State University in Partial Fulfillment of the Requirements for the Degree

MASTER OF PUBLIC HEALTH

ATLANTA, GEORGIA
30303
A COMPARISON ANALYSIS BETWEEN THE STATE OF GEORGIA AND ISRAEL:
HEALTH OUTCOME DISPARITIES OF LOW BIRTH WEIGHT INFANTS

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April 4, 2017
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Dionne Spears
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CHAPTER I

1.1 Infant Mortality and Low-Birth-Weight

The child mortality rate is an indicator of maternal health, quality of care, access to medical care, socioeconomic conditions and public health outreach. According to the World Health Organization low weight at birth is the result of preterm birth (less than 37 weeks of gestation) or full-term restricted in-utero fetal growth. Low-birth-weight is also closely associated with delayed cognitive development in children and chronic diseases later in life (World Health Organization). Globally, 28-35% of neonatal deaths are due to short gestation and preterm birth complications (Bryce, Black & Cesar, 2013; Centers for Disease Control and Prevention, CDC, 2016).

Infant mortality rates have remained higher and have declined more slowly in the United States than in most other developed countries (National Center for Health Statistics, 2014). Infant mortality rates appear linked to the income, race, ethnicity or nationality of the mother. Infant death rates are highest among women with 12 or fewer years of educational attainment. In 2008, the United States infant mortality rate among babies born to non-Hispanic black mothers was 2.5 times the rates seen among babies of non-Hispanic white or Hispanic mothers (Robert Wood Johnson Foundation, 2008). Infant mortality data for Israel (2004) shows that babies born to Jewish mothers were on par with other Organization for Economic Co-operation and Development (OECD) countries, while Non-Jews had slightly lower numbers (OECD, 2015). In the state of Georgia infant mortality rates are below the United States average and Georgia ranks
near the bottom (46th out of 50 states) of U.S. outcomes (Robert Wood Johnson Foundation, 2008).

The birth-weight rate is another maternal health indicator of a healthy pregnancy, it is a continuous variable that varies by population, and is considered a strong predictor of infant survival. The smallest preterm babies are deemed to be at the greatest health risk. Infant weights recorded as less than 2500 grams or 5.5 pounds regardless of gestational age is considered a low weight (LBW). The LBW rate has a direct influence on infant mortality rates and is also used to predict future challenges to the healthcare system.

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<tbody>
<tr>
<td>Israel</td>
<td>13.72</td>
<td>10.78</td>
<td>8.36</td>
<td>6.46</td>
<td>5.01</td>
<td>3.9</td>
<td>3.48</td>
</tr>
<tr>
<td>US</td>
<td>11.6</td>
<td>10.37</td>
<td>8.81</td>
<td>7.47</td>
<td>6.99</td>
<td>6.87</td>
<td>5.97</td>
</tr>
<tr>
<td>GA</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>9.4</td>
<td>8.5</td>
<td>8.0</td>
<td>6.3</td>
</tr>
</tbody>
</table>

Table 1: Infant Mortality Rates 1980-2010 within Israel, the U.S and Georgia

[Number of infant deaths / Live births] * 1,000
Data Sources: CIA (U.S), The World Fact-book (Israel) & Georgia Oasis (GA)

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Hispanic</th>
<th>Non Hispanic White</th>
<th>Non Hispanic Black</th>
<th>IS</th>
<th>Total</th>
<th>Jewish</th>
<th>Arab (or Muslim)</th>
</tr>
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<tbody>
<tr>
<td>GA</td>
<td>8.2%</td>
<td>5.70%</td>
<td>5.5%</td>
<td>13%</td>
<td>IS</td>
<td>3.70%</td>
<td>2.2%</td>
<td>6.4%</td>
</tr>
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Table 2: Infant Mortality Rate (deaths per 1,000) Georgia and Israel by Race and Religion
Sources: Georgia OASIS, 2015; Israel Central Bureau of Statistic, 2015
1.2 Preterm Labor, Causes & Risks

Preterm birth is a condition where the baby is born alive before the 37th week of pregnancy. Given that most preterm infants lack time in utero they often fail to gain essential birth weight for important development (Lake, E. T., Staiger, D., Horbar, J., Kenny, M. J., Patrick, T., & Rogowski, J. A., 2015). The underlying reasons for a short gestation, premature labor, or preterm birth is only partially understood, however conditions related to genetics, behavior, educational attainment, socioeconomic status (SES), and subjective social status (SSS), and social environment plays a role.

Numerous risk factors affect preterm birth which includes: positive smoking status, alcohol consumption, and abuse, or controlled substance use. The largest study ever done on smoking during pregnancy confirms the risks of smoking on a developing fetus and explains how exposure to cigarette toxins during fetal development produces changes in the epigenomes (used to assemble DNA) of babies (Joubert, Felix, Yousefi, Wilcox, Melén, et al., 2016). Other factors include maternal behaviors that are considered to be risky behaviors including poor nutrition, sedentary lifestyle, and unmanaged chronic health conditions. Additionally, women who experience multiple pregnancies, are pregnant with multiples (twins or more), have a maternal history of preterm labors, or who have had past pelvic surgeries, cesarean or otherwise are at increased risk of labor before 37 weeks. Women with high blood pressure, gestational diabetes or who develop pre-eclampsia while pregnant also risk medically induced preterm labor (American Congress of Obstetricians and Gynecologists, 2013; Calderon-Margalit, R., Sherman, D.,...
Manor, O., & Kurzweil, Y., 2015, Ekwo, et al.,1992; Lake et al., 2015). These risk factors include women who are pregnant as a result of invitro fertilization or who develop reproductive or fetal abnormalities such as placenta previa, as well as, women with a history of specific or nonspecific infections.

According to a study done by Conley, D., & Bennett, N. G. (2000) the birth weight of the parents may also impact the birth weight of the baby. This study predicted that the probability of having a low-birth-weight child increased nearly four-fold if the mother was born underweight and six-fold if the father was also born low-weight. No matter the cause of early labor the findings conclude that the shorter the gestation, the smaller the baby, and the higher the long-term risks.

1.3 Maternal Stress & Low-birth-weight

Infant health outcomes are influenced by distal and immediate factors such as the mother’s socio economic status (SES), subjective social status (SSS) and education attainment. In conjunction with the mother’s demographic access to quality health services, utilization of available care (i.e. prenatal care) and demand for the care of specialists. Variables such as age, race, ethnicity, environment in addition to past experiences, current behaviors, and degree personal agency all contribute to the quality of infant health outcome.

Multiple stressors and long-term chronic stress produce what is known as allostatic overload, and this highly damaging to fetal health. Maternal stress is suspected to have long-term consequences, even inter-generational transmission according to
behavioral researchers. Such research suggests that maternal mental health problems triggered by violence, deprivation, discrimination, perceived poor subjective social status, poor economic conditions, or even a lack of emotional or social support adversely affect the fetus. Also, that chronic maternal stress jeopardizes the length of gestation, and is strongly associated with preterm labor risk (Baron-Epel, O., & Kaplan, G., 2009; Butler, A. S., & Behrman, R. E., 2007; Braveman, P., Sadegh-Nobari, T., & Egerter, S., 2008; Braveman, 2008; Calderon-Margalit, 2015; Evans, G. W., 2004; Wadhwa, P. D., Entringer, S., Buss, C., & Lu, M. C. (2011).

There is a high incidence of low-birth-weight babies born to mothers with lower education attainment and income (Braveman et al., 2008). College-educated black North American women have higher rates of preterm birth than both equally and lesser educated white women (Frey & Klebanoff, 2016). Regardless of race, women with less education may lack health literacy skills needed to demand the best care for herself and her baby. Research reveals that less educated women have a lower demand for healthcare services and may have poorer health at conception (Braveman et al., 2008). During pregnancy, unchecked, chronic health conditions may put both the mother and baby at risk. For instance, high blood pressure may trigger pre-eclampsia which is a leading cause of preterm labor in black women (Anselem, O., Girard, G., Stepanian, A., Azria, E., & Mandelbrot, L., Calderon-Margalit, R., Sherman, D., Manor, O., & Kurzweil, Y., 2015; 2011; Cuspidi, C., Sala, C., & Grassi, G., 2016; Wang, X., Zuckerman, B., Coffman, G. A., & Corwin, M. J., 1995). Additionally, women from less educated, lower
SES backgrounds may live in unhealthy neighborhoods or dwellings. Women may also work in environments that expose them to conditions unhealthy for a growing fetus or maybe be subjected to physically demanding work during pregnancy (Braveman, 2008).

1.4 Geography, Access to Care & Health Outcomes

The geographic location of the pregnant woman may be an indicator that a woman will give birth to a low-birth-weight infant. For this reason, location is also an important determinant of health because women who live in various demographic areas have different levels of access to care. Thus clinical outcomes may differ substantially between countries, states, neighborhoods and even zip codes. Some countries have well-developed healthcare infrastructure, while other countries provide universal access to care. Some U.S. states have liberal health care budgets, while others are subject to more fiscal restraint. Also, there is arguably greater access to healthcare in urban areas. Rural residents may often face a lack of healthcare infrastructure, sparse availability medical providers, and less affordable care. Disparities persist between children without regular wellness visits, vaccinations, and other significant health screenings, and children who live in rural areas (Amitai, Y., Haklai, Z., Tarabeia, J., Green, M. S., Rotem, N., Fleisher, E., & Leventhal; A., Bryce, J., Black, R. E., & Victora, C. G., 2013).

Furthermore, the opioid epidemic has disproportionately effected rural areas. Since 2004 the proportion of newborns born drug dependent has increased from 1.2 per 1,000 to 7.5 per 1,000. In the U.S. "the hospital costs associated with treating addicted newborns rose from $732 million in 2009 to $1.5 billion in 2013 with 81% attributed to
state Medicaid programs in 2012”. One study found that rural infants and their mothers were more likely have lower SES (Patrick, S. W., Davis, M. M., Lehmann, C. U., & Cooper, W. O., 2015). According to another study an infant born addicted to opiates (having neonatal abstinence syndrome) whether preterm or not are more likely to have a lower birth weight and lower APGAR score (Rahi, E., Baneshi, M. R., Mirkamandar, E., Maghsoudi, S. H., & Rastegari, A., 2011).

1.5 Long Terms Effects of Low-Birth-Weight on Infants

Lower birth weight babies are more likely to have more health care needs than heavier babies, for example above-average use of health services, daily medications and activity limitations (Urban Child Institute, 2010). Low-birth-weight babies also risk developing complications as they age, due to the lack of vital in utero growth time. Conditions include jaundice, sleep apnea, respiratory distress, chronic lung disorders, heart problems, anemia, and gut infections. Other studies cite that practice of inducing a rapid increase in weight gain, known as "catch-up growth" makes low weight infants prone to obesity, hypertension, insulin resistance, glucose intolerance/diabetes and cardiovascular disease later in life (Cettour et al, 2005).

The 2011–2012 National Survey of Children's Health presented a range of developmental disorders associated with long-term effects of low infant birth weight including cerebral palsy, behavioral-conduct disorders, learning disability, and non-specific developmental delays (USHHS, 2014). The Rosenberg et al. study (2002) revealed disabilities such as lower I.Q (leading to lower educational attainment),
hyperactivity disorders and developmental issues related to school achievement.

Prematurity and low-birth-weight (LBW) also impact the neurological development of the brain (Shankoff & Phillips, 2000).

Another area of concern is that LBW babies spend more time in the hospital away from their mothers, and this may effect maternal-child bonding. Child brain, cognitive and behavioral development research shows that bonding with the mother improves health outcomes into adulthood (Evans, 2004). However, some conditions require more extensive and expensive therapies and predicted health challenges resulting from LBW cases will drive up future healthcare costs.

1.6 The High Cost of Low-birth-weight on the Healthcare System

Fifteen years ago the Centers for Medicare & Medicaid Services (CMS) financed about 45% of all births in the United States (Markus, A. R., Andres, E., West, K. D., Garro, N., & Pellegrini, C., 2013). Since the passing of the Affordable Care Act (ACA), the number of publicly subsidized births has increased either directly via Medicaid or federal assistance on the health insurance marketplace. A review by the Medicare & Medicaid Research Review estimated preterm births costs in the United States at $26.2 billion, an average per admission cost for treating complicated births which are increasing (Fairbrother, G., Owens, P., Garro, N., Pellegrini, C., & Simpson, L. (2013).

However, there have been improvements in antenatal and prenatal care for low-income women of childbearing age (most of whom were previously ineligible for Medicaid), and this is predicted to result in healthier pregnancies in the future (Markus,
2012). Likewise, investments in improving health promotion and behaviors, such as reducing alcohol and tobacco use during pregnancy may also improve aggregate maternal and infant health outcomes.

**1.7 New Classifications for Preterm Labor**

Despite the trend of low weight births increasing slightly, the past 30 years have shown signs of progress, there is more research, maternal care has improved, and preterm infants have greater chances of survival. In addition, maternal age has increased, there is better detection and treatment of maternal health problems and obstetric practices can successfully manage multiples (twins or more) through medically induced caesareans and sophisticated fertility treatments (World Health Organization, 2016).

Revised classifications of clinical characteristics are also helping researchers determine how preterm birth can be better understood and mitigated. According to this system, preterm conditions are categorized into nine characteristics found in pregnant women: “infection/inflammation, hemorrhage, maternal stress, cervical insufficiency, uterine distension, placental dysfunction, premature rupture of membranes, maternal comorbidities, and familial factors” (Frey, H. A., & Klebanoff, M. A., 2016).

In on study more than 75 % of women who participated qualified as having more than one phenotype, maternal stress was the most common factor at 60% regardless of race. Although, maternal stress was also the most common phenotype among African American women, while cervical insufficiency was most prevalent among whites.
Placental dysfunction and hemorrhaging were most common among women who delivered at <28 weeks (Frey, H. A., & Klebanoff, M. A., 2016).

1.8 Project Motivation, Research Questions & Objective

This topic was chosen because of interest in women’s health, an opportunity to intern in Israel, undergraduate background in international affairs, and an opportunity to explore global public health policy. The objective of this project is to present low-birth-weight as a continuing public health challenge, to investigate maternal and infant health outcomes in both Israel and the state of Georgia, and to better understand the populations health differences.

In comparing the state of Georgia and Israel, it is predicted that Israel's better maternal outcomes are due to steady public funding, a commitment to social medicine (i.e. Tipat Halav), a focus on health equity and a better grasp of caring for diverse communities. Meanwhile, Georgia - which has shown disinterest in Medicaid expansion and the Affordable Care Act - has less access to care and greater differences in health outcomes between populations. This lifelong-student remains curious about how Israel has been able to improve population differences and has questions.

Report Research Questions

- Are there maternal or infant health outcomes disparities among Israelis?
- Where and among whom are these disparities most present?
• How are vulnerable communities served?

• What are Israel's best maternal health practices?

The model provided in this paper will be descriptive and will present a cross-sectional view of maternal health outcomes in these two localities. It will also include qualitative data sourced directly from the Israel Ministry of Health, Central Bureau of Statistics (Israel), Georgia Department of Vital Statistics, CDC, Kaiser Family Foundation, Georgia Department of Community Health and others. Spatial analysis (QGIS) will be used to illustrate comparable variable and highlight any disparities based on location. Finally, I will conclude by providing insight into current policies, what I suspect is working best, and some recommendations.

Paper Outline

Chapter I

• Provide infant health measures and introduce the problem of low-birth-weight as a public health challenge with impending healthcare costs.

• Present the issue of infant mortality, low infant birth weight (LBW), and discuss the reasons, concerns and the consequences.

Chapter II

• Introduction to Israel, the Israeli healthcare system, vulnerable populations

• Introduction to Georgia, Georgia's healthcare system, vulnerable populations
Chapter III

• Methodology

Chapter IV

• Summary of Findings

Chapter V

• Discussion: Policy implications, future research suggestions & summary.

• Highlight improvements in infant health and LBW while focusing on areas where improvements are needed.

• Present limitations and challenges to working with chosen data.
CHAPTER II LITERATURE REVIEW

2.1 Introduction to Israel

Israel is a diverse country of immigrants much like the United States, but with entirely different demographics. Seventy-five percent of the population is multi-ethnic consisting of the Europeans Ashkenazim from France, Germany and Eastern Europe, the Sephardim of Spain, Portugal, North Africa and the Middle East, and the Mizrahi of North Africa and the Middle East. After Israel's statehood was established migrants from all over the Jewish Diaspora migrated to the Middle East. Mass immigrations of Yemeni Jews immigrated between 1949-1950, Eastern European between 1980-2005, and Ethiopian Jews between 1984-1991 (Rosen et al., 2015). Israel is a multilingual society with Hebrew, Arabic, and Russian widely spoken.

Twenty-five percent of the Israeli population are of Arab descent and predominantly Muslim including residents of the Negev desert and the Palestinians of the Palestine Authority. Although, there is also a population of Arab Christian and Arab Druze. Researchers typically divide the community into race/ethnicity cohorts: Orthodox Jew, Non-Orthodox Jew, Muslim Arab, Bedouin Arab, Christian Arab and Arab Druze.

The current population is eight million plus with an average fertility rate of 3 children per woman. This high fertility rate reflects the influence of conservative religious traditions among Orthodox Jews and Muslim Arabs. The mean age of first birth is roughly age 22 throughout the country. In 2015, Israel had a faster-growing fertility rate than any other OECD country with an average of 3.09 versus 1.7 (Rosenberg et al., 2010; Rosen, B., Waitzberg, R., & Merkur, S., 2015).
2.2 Introduction to Georgia

Georgia is demographically 62% white, 32% black, 4% Asian, 2% mixed raced, 0.5% Native American, and 0.1% Pacific Islanders with 9.4% of the population of Hispanic or Latino ethnicity. Georgia also has one of the largest proportions of African Americans in the country (U.S. Census, 2010). Today 19% of those who migrate to Georgia are from other southern U.S. states, and fewer than 10% of residents in Georgia are foreign born, lower than the U.S. average (2010 Census). Of those who migrate to Georgia are 55% are from the Americas, 9% from Europe, 8% from Africa, and 28% from Asia. The largest immigrant population in Georgia is from Mexico. According to the U.S. Census Bureau, the current population estimate of Georgia is 10.3 million (U.S. Census Bureau, Population Estimates Program, 2010) (PEP).

In the 1980s an "official English measure" was adopted by Georgia's legislators and other Southern states with large minority populations. Research suggests that this English language only policy has an anti-minority outlook (Hero, R. E., & Tolbert, C. J., 1996). Between 2010-2014 only 13.4% of Georgians spoke a language other than English at home. Among those who speak English as a second language 8% speak Spanish or Spanish Creole and 53% report speaking English well. Only 2% of Georgians report Arabic as a first language and among Arabic speakers 71.3% report speaking English well. Ninety-seven percent of Hebrew speakers speak English very well (U.S. Census, 2010).
According to the Pew Research: Religion & Public Life Survey religion is a critical part of the life of Georgians (Pew Research Center Religion Public Life Project, 2015). Seventy percent of the religious composition in Georgia is Protestants: Evangelical, Mainland, and Historically Black. Religion however does not seem to influence the age that women first give birth. In 2006 24.5 years was the average age for first time moms, slightly below the national mean of 26 years, but has increased in the past decade as has national mean. Asian women on average waited the longest to become mothers at 28.5 years, followed by non-Hispanic whites 25.4, Native Americans 24.8, Hispanics 23 and non-Hispanic blacks 22.9 (CDC: Births and Natality, 2016). Since 1990, the mean U.S.-born birth replacement rate has also been in decline. However, aggregate rates have been kept steady by birthrates of foreign-born women, which have also decreased in the past five years (Leslie, K., 2013). According to Pew research, in 2014 there were 923,000 Hispanics in Georgia, with a median age of 25, who are predominantly Catholic and among the fastest growing population in the state (Pew, 2015).

2.3 Incremental Inequalities in Israel

According to the international GINI index where zero implies perfect equality and 100 “perfect inequality”, there is a gradual widening of economic inequality in Israel. Israel's score inched up from 36.5 in the early 1990s to 42.8 in 2010, a rate faster other OECD countries (GINI, 2016). Income inequality in Israel is among the highest in developed countries, although it is still lower than in the United States.
In 2014, 22% of the population lived below the poverty limit of $7.30 per person per day (Central Intelligence Agency CIA, 2016). In Israel, the average household net-adjusted disposable income per capita is lower than the OECD annual average of $29,016. Additionally, the childhood poverty rate has risen from 26.58 in 2007, to 28.67 in 2009, and to 28.5 in 2011 (OECD Better Life Index. Israel, 2015). Expenditures on education are also lower compared to most other OECD countries with similar GDP per capita. On average, OECD countries spend $9,487 per student on education, and Israel spends about $7,000 per student on public education (OECD, 2014).

The proportion of Israeli women with a first, secondary and third degrees is slightly higher than in other OECD countries (Central Bureau of Statistics Israel CBS, 2015). Including Arab Israeli women who are "leading to the modernization of Arab women," and Arab divorce rates (Elnekave, E., & Gross, R., 2004), although women comprise more than half of the recipients of first degree from universities and academic colleges. Only 51% of Israeli women participated in the labor force in 2015, compared to 62% of men (OECD, 2015; Yafit, A., Levy. N., Yaffe. N, and Shnayderman, M., 2010). Additionally, among the Ultra Orthodox Jewish and Arab-Israeli, the two communities with the highest birthrates labor participation rates are stagnant for both sexes (CIA, 2016). Low rates of labor participation increase the risk of poverty, and continue a cycle of poverty which is higher in Israel than other developed countries (Alfandari et al., 2010).

Roughly 35% of Israeli female headed households live in poverty, this is twice the rate of for households where “the mother lives with a partner”, although these statistics
have improved since the year 2000 (Merrick, J., Morad, M., & Carmeli, E., 2003; Taub, 2012). Israeli single-parent families are relatively poor and Israel social services does little to help lift these women out of poverty (Taub, 2012). Women with young children are less likely to participate in the labor force, and the relatively low rate of women’s participation can be partly explained by traditional gender roles (Alfandari et al., 2010).

Israel’s measure of poverty based on the net family income (from work or other assets), transfer payments such as national insurance benefits and institutional or individual financial assistance. Income tax and national insurance and health insurance are then subtracted and the poverty line is defined as “the level of income equivalent to 50% of the median net income.” Those who earn significantly less than the “standard mean” are considered poor (Merrick, Morad, Carmeli, 2003). Poverty is also measured subjectively "feeling that you do not have enough to get along,” this approach has also been incorporated in EU poverty indices (Förster M. F., Tarcali G. and Till M., 2004). Available data shows that 18% of Israeli families lived in poverty in 2000 with roughly 25% of them were children (Merrick, Morad, Carmeli, 2003).

### 2.4 Incremental Inequalities in Georgia

In 2014, the mean household income in Georgia was around $50,000, according to the GINI index tabulated by 2014 American Community Survey. Georgia ranked in the lowest equality quartile with a score of 0.401 score (where 1= “absolute inequality”).

What is more, between 2006-2010 two Georgia’s counties: Greene & Randolph were ranked among the top ten U.S. counties of income inequality (Bee, 2012).
According to the 2011-2015 American Community Survey 5-Year Estimates at least 65% of women in Georgia have a high school diploma or higher: (by race) whites (88%), Asians (86%), and Native Hawaiian and Pacific Islanders (86%) rank higher than African Americans (83%), American Indians (79%), and Hispanics (65%). However fewer Georgia women have a bachelor's degree or higher: 51% of Asians, 31% of whites, 19% blacks, Native Hawaiian and Pacific Islanders 15%, Hispanics 14%, and Native American or Alaska Native 13%. Georgia invests approximately $9,200 per student, which is less than the nationwide average (National Public Radio, 2016).

In 2014, nearly 20% of working age women lived below the poverty line and 9.8% of women were unemployed compared to 7% of men at (Data Access and Dissemination Systems DADS, 2016; Bureau of Labor Statistics, Local Area Unemployment Statistics, 2016). Forty-one percent of families in Georgia were maintained by women (women as householder only, no husband present), and 27.5% of Georgia’s children were living at levels below poverty. Young, unmarried women with children are less likely to participate in the labor force, and are at the greatest risk for living in poverty.

Some policy analysts suggest that poverty is measured by dimensions such as education and health therefore relying income alone may provide an inaccurate rate of poverty. According to a new economic study from Georgia Tech “Americans living in deprivation is significantly higher than the official poverty rate, between 2008 and 2013, nearly 30% of people living just above the poverty line were struggling in ways not captured by income” (Wallas, 2016).
2.5 Vulnerable Populations Israel

Israel’s population is diverse and therefore there are a variety of community health needs and concerns. Although Israel is without a database on teenage pregnancy, young mothers are at particularly high risk for premature birth, the leading cause of infant mortality among Jewish-Israelis. The teenage pregnancy rate is estimated at approximately 32 per 1,000 adolescent girls, calculated as the sum of three outcomes: live birth, induced abortion, and fetal loss at all stages of pregnancy (Sikron, Wilf-Miron & Israeli, 2003). This rate was three times higher among Arabs compared to Jews, although teenage pregnancy rates have decreased by 12% in the past decade (Sikron et al., 2003).

Non-Orthodox Jewish mothers age 21-44 women are also more likely to smoke than other Ultra-Orthodox and Arab women and according to health data and smoking is a characteristic for low-birth-weight (Toledano, Zussman, Frish, & Gottlieb, 2013). Smokers were more likely to have incomes under the poverty median, and more likely to have have smoked at least 10 cigarettes a day. Although, there has also been a drop in the proportion of smokers among all women in Israel women according to a Ministry of Health (2009) study.

For Arab Israeli women the leading cause of infant mortality (following congenital anomalies) is low weight birth (Ministry of Health, 2014). Motherhood is a
rite of passage in Arab culture and women are socially held in a state of social limbo until their first (male) child (Faour & Muhammad, 1989; Remennick, 2008). A large study found conducted by Adler & Lotan (2002) found that in the region where the majority of Israeli Arabs (The Lower Galilee) doctors are generally chosen by the husbands and choice of doctor is determined by family clan, similar politics and business alliances (Daoud, 2008; Elnekave & Gross, 2004). This study also revealed that Arab women were reluctant to be examined by or to share health problems with their doctors, due to the close connections with them outside of the clinic setting.

Large families and multiple births per woman are encouraged, and consanguineous marriage (between family members) is permissible within some communities (Faour et. al, 1989). More frequent cases of low-birth-weight are found within consanguineous partnerships (Jaber et al.,1997). Low-birth-weight is particularly high among the Bedouin Arabs in the unrecognized settlements of the Negev region, where within the culture polygamy and close-kin marriages are the norm (Abu-Bader, S., & Gottlieb, D. 2008; Ben-Rabi, D., Amiel, S., Nijim, F., & Dolev, T., 2009; (Toledano, Zussman, Frish, & Gottlieb. “Birth weight among the Bedouin in unrecognized settlements is 43 grams lower than that of similar newborns whose parents live in permanent settlements”. Similarly cited in Toledano et al. 2013 study consanguineous pairing produces lower weight babies at birth. According to a survey by the Galilee Foundation in 2004, close-kin marriages are most common among the Bedouin. Close kin partnerships are also a theme among other Israeli Arabs and while each of the of four state insurance plans currently offer genetic counseling (Healthcare and National
Insurance Israel, 2015), Arab women are reluctant to request or to accept genetic testing (Toledano et al., 2013).

In another study Russian women report lower levels of mental health stability and higher levels of emotional distress compared to non-immigrant Israeli women. Russian women report acculturation stress: feelings of diminished social status, language learning difficulties, and factors around socialization. Russian women report encountering stress in medical environments where great effort is needed in order to communicate and understand instructions from nurses and physicians (Baron-Epel, O., & Kaplan, G., 2009). It is not yet reported to what degree Russian immigrant women access and utilize the full range of health care services available. What is known is that Russian women have among the lowest birth rates in Europe, although in Israel the birth rates more closely match other Jewish Israeli women.

In the Ethiopian community cohorts are determined by those who were born or grew up in Israel versus those who immigrated after age 12. Israeli Native Ethiopians fair better than Israeli Arabs in education and employment, and comparably to Non Ethiopian Israelis (Taub, 2015). Although, Ethiopians who immigrated after age 12 have poorer economic and social outcomes (Taub, 2015). In a hospital study comparing Ethiopian to European Jewish women. Black women had a higher incidence of low-birth-weight births, anemia and pre-eclampsia (Raed, Mfra, Garmi & Shalev, 2015). The black women weighed less and had the least amount of change in BMI. Second generation Ethiopian
women had outcomes similar to first generation Ethiopian women, there were no statistical difference between the two groups. The preterm labor figures for Ethiopian women in the Israeli study were comparable to the outcomes in an Ethiopian hospital study at Adigrant Zonal Hospital (Raed, Mfra, Garmi & Shalev, 2015).

**Geographic Barriers Israel**

Urban areas generally have more access to services with the exception of those who live in either “moshavim” or “kibbutzim.” For women living in remote areas there is an inconvenience and insecurity associated with travelling to urban centers, particularly for women with children or without personal transportation. Many physicians practicing in rural areas require patients to have supplemental insurance and the basic benefits package does not guaranteed access to specialists (Rosenbaum, Waitzberg & Merkur, 2015).

Many semi-nomadic peoples living in scattered homesteads throughout the desert have moderate to no medical services. Also the average Muslim women has 3.7 children, higher than anywhere else in the country. Yet Yosef-Tal is the only hospital in the Negev, is a three-hour drive from the larger and better equipped Soroka Medical Center in Be’er Sheva. The Southern region is also home to the largest percentage of Jews of African origin, where health disparities are disparaging and healthcare infrastructure is extremely limited.
2.6 Vulnerable Populations Georgia

According to the Georgia Department of Public Health the number one cause of infant mortality in Georgia are disorders related to preterm birth and low-birth-weight. According to the National Healthcare Disparities Report Georgia’s low-birth-weight and infant mortality rate also follow lines of racial, ethnic and income distinctions.

Georgia's adolescent pregnancy rate is above the national mean and existing data show women younger than age 20 and from weak SES backgrounds are at greater risk of having preterm births, low-birth-weight, and still born infants. Rates have been historically higher among Hispanic and African American teens, however, the birth rate for all teen aged girls in Georgia has been is in decline (Georgia Campaign for Adolescent Power & Potential GCAPP, 2013).

Preterm birth and low birth weight rates are higher among black women, across generations (Foster et al., 2000). Depression is also commonly reported among black women, however women with higher incomes reported less depression than lower SES participants (DeLeon, Bienias, Wilson, & Evans, 2003). Black women also reported high levels of gender and race bias (Foster et al., 2000). Georgia Hispanics are more likely to have less than 12 years of school and less likely to seek prenatal care early in pregnancy. Hispanics also have the highest birthrate in Georgia, high teen pregnancy rates and more liable to be uninsured. Black non Hispanic women are at greatest risk for pre-term labor in the state of Georgia.
Georgia has unusually high levels of uninsured, high levels of inequality, persistent county poverty and child poverty which is positively correlated to low-birth-weight and adverse birth outcomes (GA Oasis, 2016). Roughly 17% of Georgians are without insurance, higher than the U.S. average, and those without insurance are otherwise theoretically without access to care (Doty et al., 2016).

Georgia’s underinsured and uninsured are increasingly vulnerable because social welfare programs are stigmatized, and welfare recipients are socially marginalized. Programs that assist those from lower SES backgrounds are often viewed as entitlement programs and are restricted by fiscally conservative budgets. Georgia does not guarantee access to healthcare and provides no umbrella to shelter the uninsured with the exception of public health. Those with insurance demand the highest quality of care, which has led to moral hazard and supplier induced demand, while those without insurance underutilize services and are subject to high out of pocket costs (Henderson, J. W., 2012; Shi, L., & Singh, D. A., 2005).

Additionally, many Georgia counties are medically underserved areas (MUAs) with scores under 62.00 (where 0= greatest need and 100= lowest need). Only three counties in Georgia had a MUA score of greater than or equal to 62.00: Cobb, Dade, and Ware. There were no Georgia counties with a score higher than 62 (HRSA Data Warehouse HDW, 2016).
Geographical Barriers: Georgia

According to the U.S. Census (2010) 75.1% of the population of Georgia live in urban areas, while only 24.9% live in rural areas (U.S. Census, 2010). There are higher counts of low-birth-weights outside of the metro Atlanta area in less populous cities and towns (Oasis Data, 2015). Nonetheless, the obstetrical healthcare infrastructure in Georgia is weak. There are less than 80 L&D Units out of the 180 hospitals in the state, and there are over 40 counties without OB providers (Cota, P., 2014). Rural hospitals have closed OB units because of declining birth rates and expensive maintenance. Furthermore, because Medicaid covers 60% of deliveries statewide, and rural hospitals carry the bulk of Medicaid recipients, hospitals are relying DSH payments and these payments are declining (Cota, P., 2014).

There are only six regional perinatal centers with contractual public health relationships: Emory-Grady Memorial Hospital in Atlanta, Phoebe Putney Memorial Hospital in Albany, Georgia Regents Medical Center in Augusta, Columbus Regional in the Columbus Region, Navicent Health in Macon, and the Medical Center of Central Georgia in Savannah. However, these units provide perinatal education and referral locations for high risk cases. The problem is that women “independent of individual and population-level risk factors, who drive more than 45 minutes to their hospital are twice as likely to deliver preterm as women when compared to those who drive less than 15 minutes (Cota, P., 2014).
### Percent of Low-Birth-Weight Infants Born

<table>
<thead>
<tr>
<th>Year Place</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
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<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
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<td>Israel</td>
<td>8.4</td>
<td>8.3</td>
<td>8.2</td>
<td>8.2</td>
<td>8.5</td>
<td>8.4</td>
<td>8.2</td>
<td>8.1</td>
<td>8.1</td>
<td>7.9</td>
<td>7.9</td>
<td>8.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Georgia</td>
<td>9</td>
<td>9</td>
<td>9.3</td>
<td>9.4</td>
<td>9.6</td>
<td>9.5</td>
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<td>9.4</td>
<td>9.5</td>
<td>9.5</td>
<td>9.4</td>
</tr>
<tr>
<td>All U.S. States</td>
<td>7.6</td>
<td>7.6</td>
<td>7.7</td>
<td>7.8</td>
<td>7.9</td>
<td>8.1</td>
<td>8.2</td>
<td>8.2</td>
<td>8.2</td>
<td>8.2</td>
<td>8.1</td>
<td>8.1</td>
<td>8</td>
<td>7.9</td>
</tr>
</tbody>
</table>

Table 3: Percent of Low-Birth-Weight Infant Born by Year and Place (2000-2014)

Data Sources: Central Bureau of Statistics Israel, ישראל מדינת (2014); OECD

This table shows that aggregate rates for Israel are comparable to that of the United States. The U.S mean is even less than the average for Israel, however Georgia still lags behind.

### 2.7 Israel Healthcare System

In 1995, a universal health care law went into effect in order to provide equal access to healthcare to all Israeli citizens and today there are six public health districts: HaDarom (South), Haifa (Cliff), HaMerkaz (Central), HaZafon (North) Jerusalem & Tel Aviv and 18 health bureaus (Central Bureau of Statistics Israel, 2014; (Chernichovsky & Chinitz, 1995). The health bureaus are a part of public health services and have an objective to implement public health policy in the field and provide services that include care for mother and their infants.

The health system is financed predominantly via progressive taxation, but approximately 40% of health care expenditure is financed privately. Although most resources are public funded, there is an increasing reliance on private financing, which has increased in recent years (Healthcare and National Insurance Israel, 2015; Rosen et
al., 2015). Since 2002, the public share of health expenditure has (Taub Center for Social Policy Studies: Health Archives 2016).

Competition within the healthcare system is strictly regulated, and electronic records of patients are used throughout the country (increases efficiency, reduces paperwork, errors and redundancy as well as staff to process paperwork). Administrative costs are low because the state is the single payer to the four sole insurance companies. The medical staff in public hospitals and clinics are government employees, and Israeli physicians are union members who bargain collectively with hospitals and health plans. Private services are illegal in public hospitals, and physicians practice privately only in Jerusalem’s non-profit hospitals or private clinics. The government operates a large network of maternal and child health centers throughout the country (Tipat Halav). Public funding through a tightly controlled government sources and a wide range of community-based services help to keep system costs in check.

Israel requires universal participation of the healthcare system (medical insurance is compulsory) and each of the four public healthcare plans provide both basic and private supplementary plans (Commonwealth Fund, 2016). However, foreign domestic workers from South Asian countries and asylum seekers predominantly from Eritrea and Sudan are particularly vulnerable women due to lack of status and thus insurance coverage. Even though these women are not covered directly, there is free access to emergency medicine and psychiatric care (Physicians for Human Rights Israel, 2017). Furthermore, Tipat Halav is available to all women and their babies regardless of insurance coverage or ability to pay.
Prenatal Visits in Israel

The Israel Ministry of Health recommends one physician visit and 13 nurse public health visits. However, the use of maternal and child clinics is in decline. Women in more populous areas prefer HMO clinics, notably higher educated Jewish women and women of European American decent. The HMO clinics are staffed with OB/GYN and nurses. Whereas, mother and child clinics are staffed by nurses with periodically visiting physicians. The mother and child facilities are more often utilized by Arab women. Data shows however that over clinic-nurse contact is below the recommended number of visits due to nursing shortages. Similarly, there is a lack of available physicians in the mother and child clinics with the time and skill to consult with pregnant women (Palti, Gofin & Adler, 2004).

Studies show that utilizing various prenatal tests was associated with secularity, higher income, and supplementary medical insurance for the Jewish women. For Arab women higher utilization of prenatal services were associated with supplementary medical insurance and pamphlets exampling tests in detail. Data shows that Bedouin Arab women use prenatal testing selectively (Lewando-Hundt, G., Shoham-Vardi, I., Beckerleg, S., Belmaker, I., Kassem, F., & Jaafar, A., 2001). Records show that the majority of women who seek prenatal care do not accept blood tests or follow up with referrals. for or blood tests. Women had concerns about false positives, negative results and expressed concerns over the permissibility of terminating pregnancies. Bedouin women were aware that close kin partnerships might cause complicated health problems
for their babies, and ultimately choose treatment plans which balanced a need for “social and medical risk” (Lewando-Hundt et al. 2001). Prenatal testing rates have risen over the last decade for both Arabs and Jews although there are still population differences (Romano-Zelekha, Ostrovsky, Shohat, 2014).

According to the Ministry of Health Israel, the replacement fertility rate is higher for Muslim Arab women. Although, Arab women have conservative attitudes about the changing healthcare framework and tend to under utilize the technologies available, specifically those used to detect birth abnormalities (Palti, Gofin & Adler, 2004). Arab women also seek prenatal care later in pregnancy then Jewish Israelis and often within village networks or with low-tech state run maternal clinics.

2.8 Georgia Healthcare System

The American Health care system is a “Quad Function Model” based on: financing, insurance, delivery and payment (Shi & Singh, 2015). Financing and insurance determines access to care and access to care is important characteristic of population health equity. Access is multidimensional based on affordability of insurance or direct cost of care, the ability to be accommodated, and acceptability of care received (Shi & Singh, 2015). There is no single administrative body and there are multiple third party insurers and payers. High consumer costs are associated with obtaining and maintaining health insurance. High administrative costs due to the marketing of insurance products, maintenance of insurance records, negotiation of rates for products, also billing and collections. The overall system is fragmented with gaps in coverage across the country,
and data, "through August 2015 show that spending grew 5.7 percent in the past year" (Commonwealth Fund, 2016).

Within Georgia’s 159 counties there are 18 public health districts, and 32 Federally Qualified Health Centers that provide services at 156 clinical sites (Rural Health GA, 2016). FQHCs are also known as Community/Migrant Health Centers (C/MHC), Community Health Centers (CHC) of which there are 135 to service 77 counties (82 counties are without FQHC’s). FQHC’s are a safety net social feature and centers provide services to the uninsured and indigent. In 2012, FQHCs served 94% of low income (less than 200 FPL), and 73% of poor Georgia residents, 53% of who were uninsured and, and 26% of those insured by Medicaid or CHIP (Kaiser Family Foundation, 2014: The Georgia Health Care Landscape).

Georgia’s public health programs depend largely on federal funding. In 2015 the federal government provided nearly two-thirds of department’s $645 million budget while the state accounted for the remainder. The federally-funded Nutrition Program for Women, Infants and Children (WIC), makes up the bulk of the federal funds and half the department’s total budget for 2015 (Georgia Budget & Policy Institute, 2014). The implementation of WIC has lead to "an increase in average birth weight and a decrease in the fraction of births that are classified as low-birth-weight." (Hoynes, H. W., Page, M. E., & Stevens, A. H., 2009; Maternal and Child Health (MCH) Services Block Grant, 2016).
In further effort to reduce the incidence of low-birth-weight and to improve infant health outcomes, the Georgia Department of Community Health (DCH) provides Medicaid for pregnant women from low SES backgrounds and PeachCare for their children. Inter-pregnancy care (IPC), case management (Resource Mother program), and family planning services (up to 24 months) are available to any woman who births a child weighing less than 3 pounds, 5 ounces. Women must be U.S. citizens, residents of Georgia and have a gross family income of no more than 200% of the federal poverty level (FPL) to participate (PeachCare for Kids, 2016).

**Prenatal Visits in Georgia**

Although preventive medical visits have declined, the percent of women receiving prenatal care was 73.9% in 2009, and 68.1% in 2013, which has remained above the national average. Over 78% of non-Hispanic Black women reported having seen a provider, while only 60.7% of Hispanic women had a prenatal visit. The percentage of women receiving antenatal care services was higher among women with a higher educational attainment. Some of the factors limiting care included a lack of insurance between pregnancies, a lack of facilities/clinics for prenatal care, as well as shortages of obstetric providers in rural areas where there have been labor and delivery unit closures (Maternal and Child Health, 2016).
CHAPTER III

3.1 Methodology

This project is a desktop analysis which utilizes both quantitative and qualitative data. The data collection process consisted of research papers sourced via the library systems at both the University of Haifa (during a Global Health Leadership program (2016) and Georgia State University. Research articles on low birth weight, preterm birth and infant mortality were sourced to gain contextual information about communities of interest.

Data collection began with purposeful sampling, selecting infant mortality data and low-birth-weight data, and then opportunistic sampling, using the references of authors to find more specific studies of vulnerable populations. Upon returning to Georgia, U.S data was collected, reviewed and compared to compare populations disparities within the state of Georgia to that of Israel. Lastly, QGIS spatial analysis software was used to compare the education of women variable between the two localities.
CHAPTER IV

4.1 Summary of Findings

In both localities, adolescent girls are at high risk of LBW births. However, Israel does not track teen-pregnancy with a national database. Women who smoke during or engage in high-risk behaviors pregnancy are at increased risk of LBW births and birth related complications despite geographic location or nationality. There is also growing inequality in both Israel and Georgia, as well as high rates of childhood poverty. Additionally, expenditures on education are also lower in both Israel (compared to the OECD) and Georgia (compared to U.S average). However, educational outcomes are not much different with higher levels of matriculation found around the central district (state capital) Tel Aviv and Atlanta.

Although Israel offers universal access to healthcare insurance, the health system is becoming privatized. Progressive taxation finances health care and programs, for example, Tipat Halav’s Mother/Baby Wellness program. However, since 2002 the public share of health expenditure has decreased from 62% to 56% of the national expenditure.

In Georgia, minimized is the role of the government and maximized is personal responsibility, healthcare services are a market, not a social good (Henderson, J. W., 2012; Morone, J. A., Litman, T. J., & Robins, L. S., 2008). Public health investments have increased, albeit marginally.

Israel

Based solely on aggregate data it appears that Israel has better maternal health outcomes, however when you disaggregate the data disparities become apparent. The
low-birth-rate and preterm birth rates are higher for Arab women, specifically in the lower Galilee and the Negev regions (Abu-Bader, S., & Gottlieb, D., 2008). The low-birth and preterm birth rates are higher for Arab women, specifically in the lower Galilee and the Negev regions. The cultural practice of close kin partnership results in birth weights 110 grams less than that of newborns with unrelated parents (Toledano et al., 2013). In Lower Galilee, Forty-four percent of Arab women were under the care of a village doctor from the own clan, and ninety-two percent of the Arab women were under the care of a male physician. Women in this community often lack to autonomy to make decisions about their health care in ways that might improve maternal health outcomes.

Arab women also have higher rates of hospitalization rates compared to the Jewish woman. And, Israeli hospitals lack professional language translators leaving women to over rely on non-medical staff and family members to explain medical procedures and complications (Palti, Gofin & Bella, 2004) (Rosenbaum, Waitzberg, & Merkur, 2015). Language barriers present an obstacle to care which may exacerbate poorer than Jewish maternal health outcomes. Bedouin-Arab women are marginalized both within society (living in illegal settlements, lacking services to local municipalities, and subject to demolition), and within a patriarchal community framework. This “contributes to personal and collective trauma …which amplified by women's primary role as caretakers” (Gottlieb, N., & Feder-Bubis, P. (2014). Numerous attempts have been made to relocate Bedouin-Arab on to grid services and townships (Israel Ministry of Foreign Affairs, 1999).
Ethiopian women have a high incidence of poor birth outcomes including low-birth-weight, anemia, postpartum hemorrhage and pre-eclampsia. As well as 2.5 times greater likelihood of developing pre-eclampsia, and are 1.7 times more likely to have had a vacuum or non-elective cesarean births compared to non-Ethiopian Jewish women (Raed, Mfira, Garmi & Shalev, 2015). Women who came to Israel before the age of 12 fair better with education and employment. However, there is no data indicating education and employment advantages translate into maternal health improvements (Taub Center for Social Policy Studies, 2015).

**Changes Within the Healthcare System: Israel**

The state policy on healthcare is shifting toward “Americanization”. As the system relies more on the privatization of health plans, private doctors and specialist’s improvements in population health outcomes may be shifting to a lesser priority. In 2015, spending on voluntary health insurance exceeded supplemental insurance spending of that in the European Union (Rosenbaum, Waitzberg & Merkur, 2015). Access to specialty care is encouraged because it incentivizes Israelis to purchase supplemental insurance, however, what is now occurring is that the public pays more, but does not receive more services comparable to the increase in spending.

Regarding equity, this is likely to harm the public health system in the long run. The purchasing of private plans is signaling concern that basic level state programs are insufficient to cover desired services. The problem is that those who can afford supplemental insurance will buy it, but not everyone can afford it. Privatization may also
create a moral hazard, where those with insurance over-utilize services and others are at best provided what the state can afford.

Another consequence of changes within the healthcare system is that trends within the private health sector are spilling over into the public sector, for example, doctors pushing for higher salaries to more closely match those who are working privately. The public sector may need to increase wages to doctors to prevent them from abandoning public health efforts (Linder-Ganz, 2010). Unfortunately, rather than aiding the federal system, Israel has reduced public funding and encouraged private insurance funds to supplement the cost of services. As a result, private specialty care is in increased demand, and the cost of this care has risen. Analysts predict a decline in efficiency and decreased access to medical services for the poor specifically for those outside of the geographic periphery (Taub Center State of the Nation Report 2010, 2011).

An example of what supplemental insurance benefits provide for new mothers is the “milonit” or “baby hotel”. The milonit was designed to pamper postpartum women during their three months of government-mandated maternity leave (Israeli laws also provide a 5-day paternity leave) (Newman, Marissa, 2016; Kol Zchut: All Rights Maternity Leave, 2017). Those who can pay extra “launch into new motherhood with an extra dose of luxury” (Kamin, 2017). Most supplemental insurance will pay for a few nights, and there are four home style milonits in Israel with doctors on call 24-7, while the other option is a traditional recovery room where the doctors make rounds. Seeing that there are segments of society that cannot afford supplemental care, could something
as innocuous as the post-partum recovery environment perpetuate further differences between populations?

**Georgia**

Georgia also has multiple vulnerable communities: the uninsured, Hispanic teens, black women, women in rural areas, and women with less than a high school education. In 2014, 1 in 9 babies (10.8% of live births) born in Georgia was born preterm, above the national average (March of Dimes; Kaiser Family Foundation/ Preterm Births, 2014). Women who gave birth to multiples (twins or more) were seven times as likely to be preterm in Georgia (Peristats, 2016). By race: Black non-Hispanic women had the highest preterm birth rate of 13.5%, followed by white non-Hispanic 9.3%, and Hispanic 9.2% (Kaiser Family Foundation/ Preterm Births, 2014). Black non-Hispanic women are at greatest risk for early labor in the state of Georgia.

In 2015, Georgia’s low-weight-birth rate was 9.5 per 1000 births, also above the national mean. Young women (under age 19) are at increased risk of lower birth-weight babies. Georgia’s adolescent pregnancy rate is above the national average of 9.3% at 10.9% (Hamilton et.al, 2015). According to the CDC, there are 30.5 live births per 1,000 females aged 15-19 compared to national rate of 26.5 (CDC, 2014). By race Georgia had per 1000 births: 23.3 white, 36.0 black, and 43.8 Hispanic teen births (Kaiser Family Foundation/ Teen Birth Rate, 2014).

Another risk factor for young mothers is that they tend to have less education. Births to females with less than a 12 years of school in Georgia was 15.3%. Of these births, 10% were white, not Hispanic, 14.3% black not Hispanic, and 39.3 Hispanic teens
gave birth in 2015 (OASIS Maternal Child Health (MCH) Statistics, 2015). Being Hispanic, earning less than $24,999, being under the age of 34 years is associated with being uninsured in Georgia. Sixty percent of Hispanic women report being uninsured while, 26% of black women and only 17% of white women are uninsured in Georgia (OASIS Maternal Child Health (MCH) Statistics, 2015). Cleary, young Hispanic women from lower SES, are a vulnerable population in Georgia.

Medicaid-financed 54% of state births in 2014 (Kaiser Family Foundation/ Births Financed by Medicaid, 2016). Between 2013-2014 Georgia received $184,693,477 (approximately $18.48 per person) in federal public health funding (Robert Wood Johnson Foundation, 2015). Although the CDC’s Prevention and Public Health Fund a headquartered in Atlanta only received $26,649,444 in federal funding, about $1.52 per person (Robert Wood Johnson Foundation, 2015). However, inequality, poverty, lack of insurance, and lack of access to care are synonymous with Georgia. In rural areas especially, hospital and clinic closures a makes it difficult for women to receive proper prenatal care.

However, in 2015 only 5.3 of Georgian women reported late to no prenatal care, of those women, 8.7% of Hispanic women, 7.7% of black non-Hispanic women, and only 3.3% of white, non-Hispanic women received little of late prenatal care (OASIS MCH, 2015). Using the Pearson Correlation Coefficients Analysis, limited access to care is positively correlated with low-birth-weight and preterm birth, however living in rural Georgia is not significantly associated with low-birth-weight and is negatively associated with less than 5 Prenatal Care Visits (PNCV). Georgia is a strong provider of antenatal
care services; nevertheless; the overall maternal health infrastructure is weak. Poverty and inequality continue to have negative impacts on clinical outcomes.

**Changes Within the Healthcare System: Georgia**

U.S. investments in public health are about 3% of the budget, but the investments are increasing albeit slightly. Georgia’s public health funding ranks 37th in the nation, below the national average (Robert Wood Johnson Foundation, 2015; Centers for Medicare & Medicaid Services, CMS 2016). Since the 2016 U.S. Presidential Election, a shift in national priorities and an agenda to dismantle the Affordable Care Act (ACA) has thrown many in the health care field in suspense. How, when and where reforms will take shape are still unknown. However, the changes are predicted to reduce the number of people currently insured, cut tax credits for those with low-incomes and increase insurance premium costs for those with pre-existing conditions (Gaffney, 2017). Cuts to Medicaid also means a cut to a program that covers an increasing amount of child birth cost in Georgia.

In the meanwhile, public health programs will need to be well managed to address families most at risk. PeachCare in Georgia does a good job at providing coverage for all children despite the immigrant status of parents, although the cost premiums and co-pays may add additional expenses to families most in need. However, with Georgia’s strong commitment to strengthening prenatal care and assistance of federally funded programs like WIC, it is hoped that further disparities are not created, in spite of a weak maternal health infrastructure.
CHAPTER V

5.1 Current Policies

Addressing Disparities Israel

Tipat Halav Well Mother/Baby program addresses disparities by providing equitable community-based services to families regardless of SES. Tipat Halav is in alignment with the Healthy Israel 2020 goal to further reduce inequalities in health in Israel (Belmaker, 2008). The Well Mother/ Baby clinics began in 1913, is funded by the Ministry of Health and provides services to all local municipalities. Clinics are staffed by public health nurses and physicians and monitored by district regional health offices. The services offered at Tipat Halav clinics have aided in the reduction of maternal and infant morbidity and mortality by addressing national priorities and targeting local needs. The model vision is rooted in social health equity, and in 2010 eliminated insurance co-payments for the program (Rosenbaum, Waitzberg, & Merkur, 2015).

There is a growing recognition to make health services more accessible to linguistic minorities, mainly new Ethiopian immigrants, and Arabic-speaking Israelis. Currently, some clinics and hospitals employ Ethiopians and Arabs staff as facilitators and language liaisons (Rosenbaum, Waitzberg & Merkur, 2015). Additionally, the Ministry of Health requires medical forms be available in Hebrew, Arabic, Russian and English. Linguistic minorities will benefit from this act, and it is hoped to prevent patients from signing unclear medical documents. However, there is no emphasis on
Tigrinya, the language most commonly spoken by the newest immigrants from Ethiopia. Israel also plans to train medical providers on cultural sensitivity and responsiveness, to create a national multi-lingual translation call center to address health care questions and concerns, and to disseminate health information to the public (presumably in multiple languages).

Tipat Halav has been widely successful offering services to all families seeking maternal and child regardless of insurance plan or legal status, all without requiring a co-payment. However, the Tipat Halav program is now experiencing challenges. Both the Ministry of Health and southern regional director Dr. Manuel Katz, admit that few pediatricians work in the Tipat Halav clinics preferring hospital pediatrics department, health-fund community clinic or private practice. "Only 15% of pediatric specialists do any work in the community, and the rest don’t understand the importance of working at Tipat Halav or other community institutions" (Siegel-Itzkovich, 2016). Tipat Halav staff earns considerably less than their counterparts in other medical institutions, also with the mean physician's age 57 years, that is evidence that interest in public medicine is waning.

<table>
<thead>
<tr>
<th>Israel’s Current Objectives to Decrease (Maternal) Health Disparities</th>
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<tbody>
<tr>
<td>• Create a national translation call center.</td>
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<tr>
<td>• Address the needs of cultural and linguistic minorities within clinical environments</td>
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<tr>
<td>• Have all medical providers adopt cultural sensitivity and responsiveness</td>
</tr>
<tr>
<td>• Target interventions for the Bedouin and other high-risk groups.</td>
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<tr>
<td>• Create, analyze, and publically disseminate health care access information.</td>
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</table>

Table 4
Source: Commonwealth Fund: Israel (2016) http://international.commonwealthfund.org/countries/israel/
* Study that examined an increase in child allowances for Bedouin families did not find significant effect on low-birth-weight outcomes (Toledano et. al. 2013).
Addressing Disparities Georgia

In 2015, Georgia prenatal care visits were above the U.S. national average. Georgia also receives federal dollars for programs like WIC, which work well. State services such as the Maternal and Child Health (MCH) division of the Department of Health and Human Services provide early access to prenatal and postpartum care for women. MCH services help identify maternal risks and also coordinate developmental screening for infants. Under Georgia law, every newborn is tested for 31 conditions, although care is limited to Georgia-born children. Families receive physician’s referrals after verification of the electronic birth certificate. Each year approximately 20% of all births are then identified as having poor outcomes or developmental delays.

The Georgia Department of Health and Human services has plans to strengthen regional perinatal outcomes by welcoming external collaborators to support child health outcome initiatives. This task force would help support the department objectives bulleted below.

- Establish verifiable perinatal hospital designation criteria and perinatal advisory committee
- Expand perinatal quality assurance committees.
- Consider equivalence between obstetrics and neonatal services in hospitals.
- Incentivize hospitals and providers to refer high risk, low birth weight deliveries to appropriate levels of care.
- Draft policies that ensure early risk factor identification and access to case management services for pregnant women.
Collaborators included are the Georgia Perinatal Quality Collaborative (GaPQC) network of perinatal care providers, public health professionals and community partners that will identify opportunities to optimize birth outcomes and implement data-driven, provider and community-based performance improvement initiatives (Georgia Department of Public Health, 2013). The Georgia Maternal Mortality Review Committee (GA MMRC) who will review pregnancy complications, selected deaths and identify problems contributing to these deaths as well as infant mortality interventions (Georgia Department of Public Health, 2013). The CDC Collaborative for Maternal Mortality is a 15-state collaborative to help create national guidelines for the Maternal Mortality Review Committees (Georgia Department of Public Health, 2013). ‘Centering Pregnancy’ is a group healthcare model that focuses on health assessment, education and support provided by practitioners (Georgia Department of Public Health, 2013). Finally included to the task force is ‘Every Mother Initiative’, which is a three-year grant based on to prevent maternal death and improve maternal health outcomes (Georgia Department of Public Health, 2013).

### Georgia’s Current Objectives to Decrease Maternal Health Disparities

- Strengthen the regional perinatal system of care
- Develop targeted educational campaigns on infant mortality related issues
- Develop external collaborations to support infant mortality initiatives

**Table 5**
Source: Georgia Department of Health and Human Services (2016)
5.2 Policy Recommendations

**Include Lay Practitioners into Expanding Networks**

As Georgia expands its network of Maternal Health Organizations, informal practitioners should also be invited to the table. Lay practitioners provide valuable services to both urban and rural women including lay midwifery and doula support. There is currently no way of tracking these birth outcomes. Lay midwifery remains illegal in Georgia unlike other U.S states and women are unlikely to report these births due to fear of retribution.

**Youth Outreach Educational Campaign**

One of the goals of those working in maternal health is to reduce inequities in birth outcomes, improve reproductive potential, and better the health of future generations. By managing the health issues of mothers and their babies as early as possible care is enhanced. To provide the best care, health policies must be culturally competent and sensitive. If in a position of leadership at the state level, first addressed would be urban and rural middle school youth in grades 7 and 8, ages 12 to 14, specifically where the is a high concentration of black and Latino youth. Young black women in Georgia have high infant mortality and are more likely to become teen mothers. Young Hispanic women are the among the fastest growing population although
the least educated, less likely to be insured, and unlikely to seek pre-natal care in the first trimester of pregnancy.

A major recommendation from this thesis is the implementation of a replicable, multi-lingual, culturally sensitive program which would reinforce the unforeseen difficulties of early motherhood stressing literacy, education, future income, and health outcomes. The program would use research methods encompassing technology, visual graphics, journal keeping, storytelling and group discussion. The goal of the initiative would be to empower girls to exercise self-autonomy and personal agency. There is a variety of evidence-based program recommended by the Department of Health and Human Services Teen Pregnancy Prevention Division (TTP), the program selected would be chosen specifically based on the needs of the community. One program that looks particularly appealing is "It's Your Game…Keep it Real (IYG)", this is classroom and computer-based program with a curriculum "grounded in theory and developed to prevent teen pregnancy"… it "emphasizes abstinence but as protection using medically accurate information"(University of Texas, 2017). The program was designed for and first tested with primarily Hispanic and African-American children in grade 7.
<table>
<thead>
<tr>
<th>INDICATORS</th>
<th>Black Not Hispanic</th>
<th>White Not Hispanic</th>
<th>Hispanic</th>
<th>Georgia Mean</th>
<th>U.S. Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fertility Rate per 1000 women (2010)</td>
<td>60</td>
<td>55</td>
<td>71</td>
<td>58</td>
<td>55</td>
</tr>
<tr>
<td>Infant Mortality per 1000 live births (2008)</td>
<td>14</td>
<td>8</td>
<td>5</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Teen Pregnancy per 1000 (2010)</td>
<td>77</td>
<td>37</td>
<td>56</td>
<td>61</td>
<td>34</td>
</tr>
<tr>
<td>Pre-natal care initiated first trimester(2008)</td>
<td>73%</td>
<td>91%</td>
<td>65%</td>
<td>78%</td>
<td>81%</td>
</tr>
</tbody>
</table>

Table 6
Source: Georgia Latino Health Report, 2012

Telemedicine for Rural Counties

Many rural Georgia counties have reduced population growth and the higher percentages of uninsured patients. The combination is a hit to rural hospitals because there is a shortage of doctors willing to work in remote areas. Lack of healthcare providers creates a lack diminished primary and specialty services, as well as an impediment to accessing care. Telemedicine could help rural hospitals better monitor high-risk pregnancy cases. Case management is of particular importance in third-trimester pregnancies because the risk of pre-term birth is most common. This intervention could improve maternal health outcomes in areas where rural hospitals have or plan to close. The challenges to implementing this intervention are the lack of broadband infrastructure and broadband access, infrastructure funding and determining telemedicine reimbursement rates.
Policy Recommendations for Israel

The author is not in a position to make recommendations for Israel due to insufficient experience with the healthcare system, and insufficient contact with the country’s most vulnerable communities. However, it is believed that if Tigrinya was represented along with Hebrew, Arabic, Russian and English within the national translation call center, as well as, included in printed health literature, new Ethiopian immigrants would benefit. It is also wished that the public health model of Israel remains strong despite its current challenges. The writer is also hopeful that the Israeli healthcare system utilizes the creativity and invocation of its people to continue to improve maternal and infant health even as public health funding declines.

<table>
<thead>
<tr>
<th>Policy Recommendations for Georgia</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Youth Outreach Educational Campaign</strong></td>
</tr>
<tr>
<td>• Outreach to counties with the highest reported cases of teen pregnancy among black and Latino youth</td>
</tr>
<tr>
<td>• Increase Positive Messaging to Vulnerable Communities</td>
</tr>
<tr>
<td><strong>Address Rural Communities</strong></td>
</tr>
<tr>
<td>• Provide telemedicine consultation and monitoring to Georgia’s rural and medically underserved communities.</td>
</tr>
<tr>
<td>• Support efforts increase broadband to the countryside for the implementation of telemedicine</td>
</tr>
<tr>
<td><strong>Increase Community Collaboration with GA Department of Health and Human Services</strong></td>
</tr>
<tr>
<td>• Integrate grass roots programs into the existing Georgia Department of Health framework and objectives.</td>
</tr>
</tbody>
</table>

Table 7
5.3 Future Research

In 2014, the aggregate preterm birth rate in the U.S. was 9.6%, although it was higher 13.2% for the black non-Hispanic woman. In 2015, African American women had the lowest reported preterm birth rates since 1998, although these rates were double that of white women (Frey, & Klebanoff, 2016; Kaiser Family Foundation Rates Preterm Births, 2014). Other studies indicate that black immigrants from South American, Caribbean, and some African countries have better maternal outcomes and less preterm risk than their African-American sisters (Taylor, & Sarathchandra, 2016), and this is a subject of great interest. Discovering the poorer maternal health among Ethiopian women in Israel the writer is interested in gathering more data about this community and comparing similarities, differences and overall outcomes to black women in certain localities.

5.4 Limitations

The quality of research could have improved by more consistent measures/indicators. For example, Israel uses an epidemiological method of collecting data based largely on religion, while the U.S. focuses on race. Other measures were not comparable such as national averages to state averages such as the expenditure of public health dollars by GDP. Other direct comparisons were not available due to the wording of survey used to collect data at the Census level.

There was also the issue of remote data, data that was either inaccessible because it was not available or project approval was required. For example, according to Dr. Lisa
Rubin at the Israel Ministry of Health longitudinal trend analysis of birth data is in the works, but not yet published. Access to other kinds of data needed project approval, either by submission of a research proposal or an affiliation with a custodial organization. An example of a custodial organization is the Israel National Population Register which maintains national hospital services data.

Other limitations included data sources and links that were published only in the Hebrew language. Due to the limited nature of data available in English information about translation services, collaborations or partnerships within Israel for English-speaking researchers would have extremely useful. Inaccessible data is a challenge to researchers with low levels of Hebrew comprehension because translation software is helpful at times, but it is often unreliable.

5.5 Gaps in Literature

There is a theory that birth weight is not entirely as predictable as the majority of the research suggests. Wilcox’s hypothesis is that “there is a noncausal association between birth weight and health outcomes”, he suggests that epidemiological research that focuses on birth weight is “inconsequential to the analysis of infant mortality or other outcomes” (Wilcox, A. J., 2001). Wilcox asserts that preterm birth, not low weight birth cause for the increase in infant deaths. Also, stated is that when comparing two populations like blacks vs. whites and smokers vs. non-smokers the only difference in birth-weight that directly affects mortality is the difference in the residual distribution (Wilcox, A., & Russell, 1990). Another researcher states that “whereby certain groups
known to have higher neo-natal mortality (e.g. Blacks in the US or immigrants in the UK) were found to have, contrary to expectation, better outcomes at low-birth-weight than Caucasians/Europeans in those countries”.

Not all small babies are premature, thus classifications such as small for just gestational age and intrauterine growth retardation are reserved for full term babies. However, smaller, full term babies would still be classified as low birth weight if they weighed less than 2500 grams. It is possible that some low-birth-babies are just small and that this is not always a pathology?

The writer is curious about what percent of low birth weight babies thrive, and where and how (with what therapies)? Also, is it likely that some women have a gene activated by allostatic overload which makes having a low weight birth outcome more inevitable? The writer has an interest in data based on DNA and genetic history and wonders if this kind of data will influence the future low-birth-weight narrative.

5.6 Summary

Aggregate maternal and infant health outcomes in Israel outrank both the United States and the state of Georgia, and as hypothesized that the differences between populations were due in large part to Israel’s robust allocations in public health which provide a basic level of care for all in the country. Women benefit from a variety of programs planned to maximize the event of a healthy pregnancy, at a fraction of what the U.S. and Georgia spend. In 2015, the U.S spent $9,403, Georgia spent $5,467 and Israel spent $2,910 per capita on health care costs (Kaiser, 2016; World Bank, 2016). However,
research reveals that Israel's healthcare system, like Georgia’s, has its challenges, and Israel like Georgia has its population health differences and disparities.

Race, religion, ethnicity, educational attainment, ability to speak the dominant language, income, affordability/ access to care, and health behaviors all matter. Women with fewer resources consistently have poorer birth outcomes. It seems consistent that as family incomes increased, maternal outcomes improve (RWJF, 2003; 2008). Disparities were consistently apparent among populations with fewer resources, less access to care and lower utilization of services. Similarly, geographically isolated areas where there is a lack of health infrastructure and a misdistribution of health care providers were associated with increased maternal and infant health risks.

Arabs in both the Northern District (Lower Galilee) and Southern District (Negev desert) have a higher incidence of preterm birth, low birth weight, very low birth weight and infant mortality, more so than other Israelis Jews and Arabs from different localities. Women living in rural Georgia counties also experience less access to care, less affordable care, and more poverty than women who reside in more affluent counties. Medicaid spending is also higher in rural counties where in Georgia there is a high rate of uninsured residents. Women who rely on Medicaid are more likely to be younger, poorer, less educated and unable to afford private insurance.

Israel's total low-birth-weight rate is lower than the aggregate rate in the U.S. However, Arab Israelis have a higher low birth rate than the U.S. aggregate. Israeli Arabs also have a lower-birth-weight rate than the Georgia total. However, Arab Israelis have a lower infant mortality rate than black women in Georgia. Black women in Georgia also
have an infant mortality and low-birth-weight rates that are both higher than the national and state average. However, young Hispanic women in Georgia are vulnerable due to lower levels of education, insurance coverage, prenatal care in the first trimester and high teen pregnancy rates (see Figures 1-3).

**Health Equity**

According to health disparity researchers, it is important to eliminate health disparities because health disparities put socially or economically disadvantaged groups at a further disadvantage (Braveman, 2014). Similarly, it is crucial to address the health effects of discrimination (due to racial or ethnic difference) or marginalization (due to cultural or language differences) between populations, even when there is no intent to differentiate. Because many vulnerable groups face systematic discrimination and are disadvantaged even across generations (Braveman, 2008).

Lower levels of deprivation at birth are associated with increased life expectancy; therefore, higher socioeconomic groups theoretically gain the most from healthcare. On the other hand, infants born with poor health, born to poor mothers have their disadvantages compounded. And, through the health equity lens, this is an injustice, because what is biologically attainable for those who are privileged could and should be the norm.
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## APPENDIX

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<tr>
<th>TERMS</th>
<th>DEFINITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth Rate</td>
<td>The number of live births occurring to females in an age group per 1,000 females in the same age group. Formula = [\text{Number of Live Births in an age group} / \text{Female population in same age group}] * 1,000. If a race, age, sex or ethnicity is chosen, both the numerator and denominator are filtered by that selection.</td>
</tr>
<tr>
<td>Eclampsia</td>
<td>Potentially life-threatening disorder characterized by hypertension, generalized edema, and proteinuria</td>
</tr>
<tr>
<td>Early Elective Deliveries</td>
<td>Neonates delivered before 39 weeks of pregnancy that were non-medically indicated. Elective deliveries may occur either by induction or cesarean section (C-section)</td>
</tr>
<tr>
<td>Infant mortality rate</td>
<td>Number of infant deaths under 1 year of age per 1,000 live births.</td>
</tr>
<tr>
<td>Low Birth Weight (LBW)</td>
<td>Birth weight less than 2,500 grams</td>
</tr>
<tr>
<td>Maternal mortality rate</td>
<td>Number of maternal deaths per 100,000 births from any cause that is pregnancy associated</td>
</tr>
<tr>
<td>Neonatal mortality rate</td>
<td>Number of deaths occurring during the first 28 days of life</td>
</tr>
<tr>
<td>Preterm birth</td>
<td>Birth before 37 completed weeks of pregnancy</td>
</tr>
</tbody>
</table>

### List of Tables

**Table 1:** *Infant Mortality Rates 1980-2010 within Israel, the U.S and Georgia*

[Number of infant deaths / Live births] * 1,000

Data Sources: CIA (U.S), The World Fact-book (Israel) & Georgia Oasis (GA)

**Table 2:** *Infant Mortality Rate (deaths per 1,000) Georgia and Israel by Race and Religion*
A Comparison Analysis Between Georgia and Israel

Sources: Georgia OASIS (Online Analytical Statistical Information System) (2015)
https://oasis.state.ga.us/oasis/webquery/qryInfantDeath.aspx


Table 3: Percent of Low-Birth-Weight Infant Born by Year and Place (2000-2014)
*Data Sources: Central Bureau of Statistics Israel, ישראל מדינת (2014); OECD

Table 4: Israel’s Current Objectives to Decrease (Maternal) Health Disparities
Source: Commonwealth Fund: Israel (2016)

Table 5: Georgia’s Current Objectives to Decrease Maternal Health Disparities
Sources: Georgia Department of Health and Human Services (2016)

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Sources: Georgia Latino Health Report (2012); Georgia Oasis (2017)

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Source: Georgia Department of Health and Human Services (2016)
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Figure 1 Sources: The World Fact-book IS; Georgia Oasis (GA)

Figure 2 Sources: Georgia OASIS; Israel Central Bureau of Statistic (CBSI)

Figure 3 Sources: CBSI; Georgia OASIS; America's Health Rankings