

INSIGHTS IN PUBLIC HEALTH

A Tale of Two Polities: Health in Independent and American Samoa

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Abstract

Independent and American Samoa have a shared cultural, genetic, ethno-linguistic, and historical background but have been politically separated since 1899. In this essay, we examine the health of these two polities and identify two key health patterns that have emerged even as American Samoa has achieved a higher per capita income than Independent Samoa. Whereas the gender gap in life expectancy at birth has narrowed in Independent Samoa, this gap has not narrowed in American Samoa and its male life expectancy now lags behind that of Independent Samoa. Neonatal mortality rates in American Samoa are slightly higher than in Independent Samoa. These patterns may be linked to the higher rates of obesity and urbanization observed in American Samoa compared to Independent Samoa, as well as the differing political and institutional arrangements of the two polities. Limited data remains a persistent challenge to conducting analysis of public health in the Pacific islands, particularly in American Samoa.

Keywords

Independent State of Samoa, American Samoa, US Territory, Insular Areas, Pacific islands, chronic diseases, diabetes, heart disease, obesity, neonatal mortality, immunization, skilled birth attendance, political economy, colonization, globalization, economic development, urbanization

Introduction

Why do certain countries with similar cultural and economic backgrounds have diverging health outcomes? Although cross-country, time-series studies offer some insight on factors explaining population-level differences, in-depth comparative case studies are necessary to understand the roles of institutions and delivery structures on health outcomes. Whereas the comparison between two societies with very different cultures, languages, and histories is limited by a variety of confounding factors, the comparison of two societies with a shared historical and ethno-linguistic background that have been subject to differing political arrangements and policies can yield insights to explain differential health outcomes. In this vein, comparative studies have examined North and South Korea, East and West Germany, and the Indian state of West Bengal and the nation of Bangladesh (formerly East Bengal) to explain measures of population health such as life expectancy and child mortality.¹⁻³

The goal of this essay is to explore differential health outcomes between the Independent State of Samoa (henceforth abbreviated to Samoa) and American Samoa (an unincorporated

territory of the United States of America). Samoans of these two regions are ethnically identical but politically separated. During the Tripartite Convention of 1899, the United Kingdom agreed to relinquish imperialist claims and gave sole control to Germany over the Samoan islands to the west of 171° longitude (Western Samoa or present day Samoa), while the United States continued occupancy in the islands to the east (present day American Samoa).^{4,5} This separation continued during World War I when control of Western Samoa was designated to the British Commonwealth of New Zealand. As a result, Western Samoa's Ministry of Health was modeled after New Zealand and the United Kingdom, whereas American Samoa's Department of Health is modeled after the United States.⁶ Western Samoa gained independence in 1962, was admitted as a member state to the United Nations (UN) in 1976, and dropped 'Western' from its name in 1997. In contrast, American Samoa has been listed by the UN as a 'Non-Self-Governing Territory' since 1946. Moreover, American Samoa is classified as an unincorporated unorganized US territory because its Constitution was not authorized by US Congress (whereas Guam, the US Virgin Islands, the Commonwealth of the Northern Marianas Islands, and the Commonwealth of Puerto Rico are classified as unincorporated organized territories).⁷⁻⁹

In the context of rapid societal changes to lifestyle and diet as a result of colonization and globalization, obesity rates in the Pacific islands including the two Samoan polities are among the highest in the world.¹⁰ How have political divergences differentially influenced health in these two polities? In this exploratory piece, we present standard indicators of population health as well as those pertaining to chronic diseases and risk factors in these two polities. We examine demographic factors followed by mortality indicators as well as coverage of services and risk factors that are associated with mortality. We conclude by raising hypotheses for research to further examine the role of institutions in explaining outcomes in these two polities.

Data

The data in this essay for both Samoa and American Samoa have been previously collected and published by the World Health Organization (WHO) and the Secretariat of the Pacific

Community (SPC), a regional multilateral intergovernmental organization founded in 1947 with 22 Pacific island countries and territories. We verified data sources using publicly available information and other government sources of the same year. Indicators for the same year were used as much as possible.

There are several challenges and limitations to consider in conducting any analysis of public health in the Pacific islands. One limitation to accuracy is the exclusion of deaths that occurred during off-island referrals, particularly from American Samoa.¹¹ The existence of off-island referrals reflects limited capacity of the local health care systems. Residents of American Samoa may resort to seeking care in Hawai'i or other states for specialized secondary or tertiary care.¹² Similarly, residents of Samoa can resort to seeking tertiary care in New Zealand.^{13,14} Off-island deaths would thus lead to the undercounting of local mortality rates.

A primary challenge to conducting analysis of the health of Pacific islanders is the scarcity and quality of health data in general. American Samoa, in particular, faces unique challenges in the data quality and availability given its political status as a US territory and a UN Non-Self-Governing Territory. American Samoa is thus routinely overlooked by international agencies. In contrast, Samoa regularly participates in reporting health statistics such as those relating to the UN Millennium Development Goals. As one example of such neglect of American Samoa, the SPC's National Minimum Development Indicators (NMDI) database reported values for 773 indicator-years for Samoa but only 181 indicator-years for American Samoa – a 4-fold differential.¹⁵ In the World Bank's World Development Indicators (WDI) database for the years 1960-2014, there were reported values for 21,701 indicator-years for Samoa (or 394 indicators per year on average), compared to only 2,709 indicator-years for American Samoa (49 indicators per year on average), an 8-fold differential.¹⁶ In addition, the WDI database reported Gross National Income for American Samoa only for the years 1973-1985, whereas it reports the same variable for Samoa since 1999 and continues to do so.¹⁶ In 2010, the US government began to calculate gross domestic product per capita of American Samoa for 2007, the latest year for which data is available.¹⁷

In addition to American Samoa's limited international status, as a US territory American Samoa is not necessarily included in the full range of federally funded data collection efforts in states. When it is included, the reporting of such data is often incomplete. For example, although the annual survey of the US Centers for Disease Control and Prevention's (CDC) Behavioral Risk Factor Surveillance System (BRFSS) is conducted in all states and some territories including American Samoa, the data for American Samoa is not available online (unlike other states), and reporting for American Samoa on the CDC website is rare. In American Samoa, there is no centralized data system for public health information.¹⁸

The scarcity of data for American Samoa is a significant limitation and barrier to conducting this comparative study. Scarce data reinforces American Samoa's difficulty in securing health

resources, in turn perpetuating a lack of data.¹⁹ This problem may be exacerbated in the coming years, since American Samoa's budget for health and welfare was recently cut from \$29.9 million in 2012 to \$10.5 million in 2013.¹⁴ Even as American Samoa's primary source of revenues to finance public health and health care comes from US federal grants, American Samoa was not included in recent national US health care reforms, which expanded coverage of and subsidized purchase of health insurance for states.²⁰

Comparative Health Outcomes

Demographics. The population structure of the two polities is similar, and thus we did not make age-specific adjustments for rate comparison between the two regions. Approximately 35% to 38% of both populations are under age 15 years, and 5% are over 65 years old (Table 1).²¹⁻²³ Both population structures are indicative of a young population. However, population growth is 0.8% in Samoa and -3.1% in American Samoa (because of greater out-migration in the latter).^{14,24} Gross domestic product (GDP) per capita (in constant 2005 US\$) was \$2,685 in Samoa in 2013 and \$7,874 in American Samoa in 2007.^{16,17} Public health expenditure per capita was \$248 in Samoa in 2011 and about \$539 in American Samoa in 2012.^{13,14}

Life expectancy. Life expectancy, an essential measure of population health, estimates the average number of additional years a person could expect to live if current mortality trends were to continue for the rest of that person's life. Life expectancy at birth in Samoa was 74.2 years in 2011.²⁴ From 1997 to 2012, the American Samoa government has reported the same life expectancy at birth of 72.7 years.²⁵⁻²⁹

Life expectancy at birth by gender over time for the two polities is publicly available originally from the Government of Samoa Census and the American Samoa Statistical Yearbook. As in most countries, female life expectancy is higher than male life expectancy. Female life expectancy at birth is slightly higher in American Samoa (77.8) than in Samoa (75.6), but male life expectancy at birth is lower in American Samoa (71.1) than in Samoa (72.7).^{14,24,25} In other words, there is a 2.9 year gap between males and females in Samoa, but a 6.7 year gap in American Samoa, suggesting greater gender inequality in the latter.³⁰ Over time, the gap in life expectancy between females and males has narrowed in Samoa from 7 years in 1998 to 2.9 years in 2011, whereas this gap may have increased in American Samoa from 6 years in 1997 to 6.7 years in 2013 (see Figure 1). (Comparisons between the two polities for the same year were not possible due to lack of data.)

Mortality. Diseases affecting both regions are shared, but they appear to occur at different rates. Diabetes, cancer, cerebrovascular diseases, and heart disease are the top four leading causes of mortality for both populations, but the rates of death from these diseases are higher in American Samoa than in Samoa.^{31,32} There were 50 deaths per 100,000 population caused by diabetes in American Samoa in 2005, compared to 29 deaths per

Indicator	Samoa		American Samoa	
	Value	Year	Value	Year
Land area (1000 km ²)	2.934	2013	0.199	2013
Population (in thousands)	187,820	2011	55,519	2010
Population aged 0-4 years (%)	12.55	2010	11.52	2010
Population aged 5-14 years (%)	25.71	2010	23.68	2010
Population aged 65 years and older (%)	5.0	2010	4.5	2010
Population growth (%)	0.8	2006-2011	-3.1	2000-2010
Urban population at last census (%)	20	2011	50	2010
Per capita GDP (constant 2005 US\$)	2,685	2013	7,874	2007
Per capita public health expenditure (current US\$)	248	2011	539	2012
Government health expenditure as % of total government expenditure	13.8	2013	9.7	2013
Government education expenditure as % of total government expenditure	18.5	2013	9.0	2013

Indicator	Samoa		American Samoa	
	Value	Year	Value	Year
Chronic Diseases				
Diabetes mortality (per 100,000)	29	2007	50	2005
Cancer mortality (per 100,000)	25	2007	55	2005
Cerebrovascular disease mortality (per 100,000)	23	2007	38	2005
Heart disease mortality (per 100,000)	19	2007	69	2005
Pneumonia mortality (per 100,000)	16	2007	18	2005
Adult overweight and obesity (%)	85.2	2002	93.5	2007
Maternal and Child Health				
Neonatal mortality rate (per 1000 live births)	4.2	2002	7.4	2002
Infant mortality rate (per 1000 live births)	15.6	2011	14.9	2010
Proportion of 1-year-old children immunized against measles	61	2010	77	2011
Skilled birth attendance (%)	81	2009	99	2013

100,000 population by diabetes in Samoa in 2007, a 1.7-fold differential (see Table 2).^{31,32} There were 69 deaths per 100,000 population caused by heart disease in American Samoa in 2005, compared to 19 deaths per 100,000 population by heart disease in Samoa in 2007, a 3.6-fold differential.^{31,32} These mortality differentials between the two polities are consistent with the higher prevalence of overweight and obesity, a risk factor for both diabetes and heart disease, in American Samoa (94%) compared to Samoa (85%).

Neonatal mortality rates exhibit differences between American Samoa and Samoa. The neonatal mortality rate in American Samoa is 7.4 per 1000 live births, compared to 4.2 in Samoa – a 1.8-fold differential – even as skilled birth attendance is 99% in American Samoa compared to 81% in Samoa.^{22,33} Infant mortality in the two polities was similar at 14.9 per 1000 live births in American Samoa and 15.6 in Samoa, and the proportion of

one-year-old children immunized against measles in American Samoa was 77% compared to 61% in Samoa.^{14,24}

Potential Determinants of Differential Outcomes

What might explain these observed differences in health outcomes? Countries typically exhibit a positive relationship between life expectancy and GDP per capita but with diminishing marginal returns in life expectancy to additional per capita income.³⁴ One might have expected a priori that, because American Samoa has a higher per capita gross domestic product (GDP) than Samoa (\$7,874 in 2007 compared to \$2,685 in 2012), health in American Samoa would be higher.^{22,23} Given diminishing marginal returns to health, Samoa with a lower per capita income has made larger gains in life expectancies compared to American Samoa (Figure 2).¹¹ Nevertheless, both

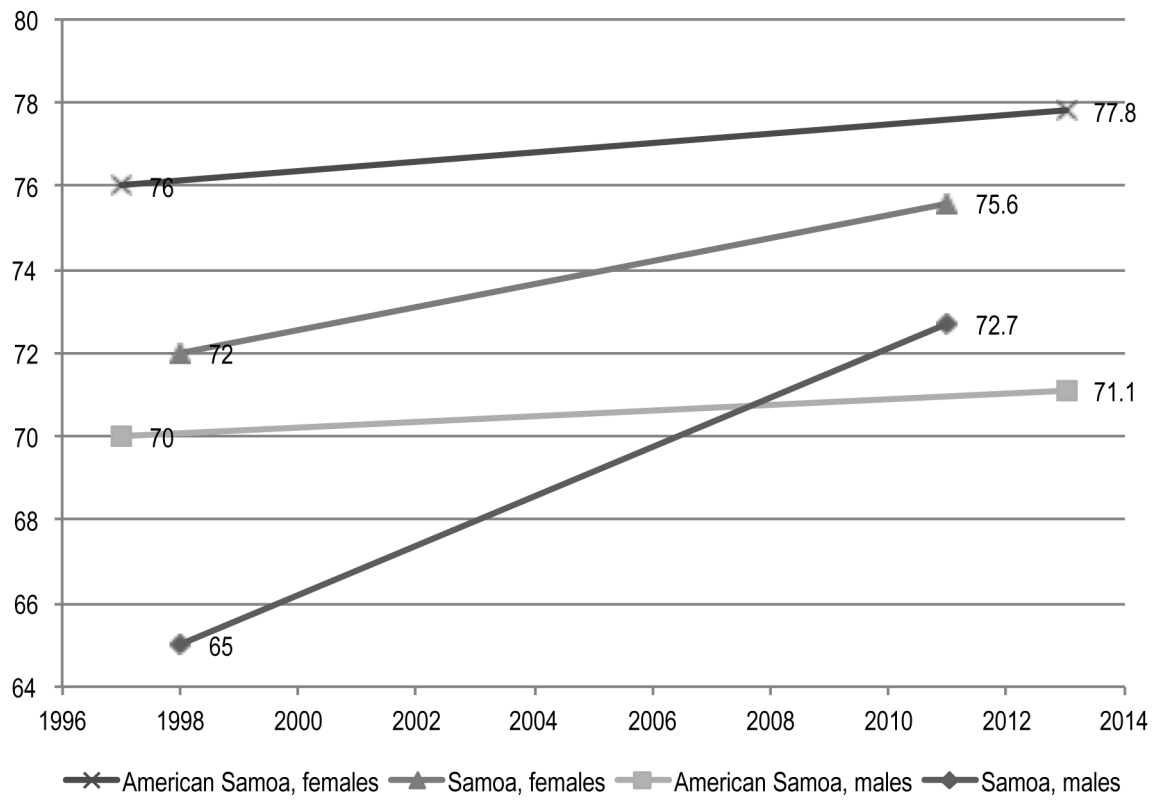


Figure 1. Female and Male Life Expectancy in Samoa and American Samoa, 1997-2013

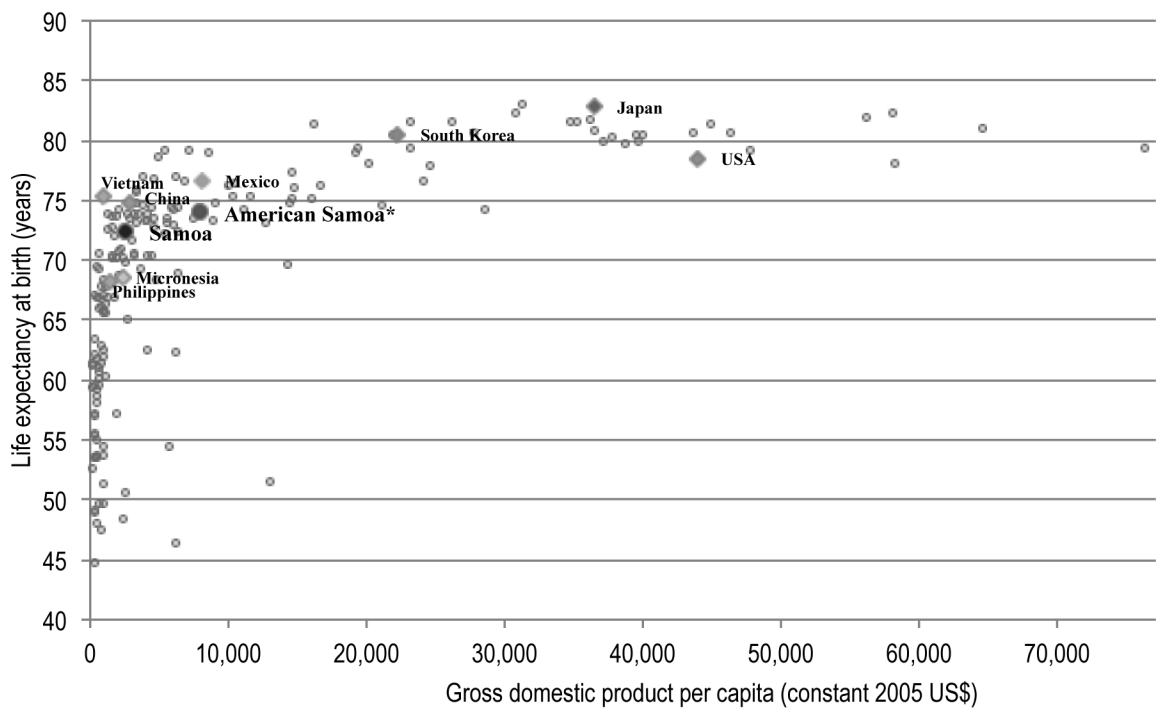


Figure 2. Life Expectancy at Birth and Gross Domestic Product Per Capita (Constant 2005 US\$), 2010

Note: *GDP per capita for American Samoa refers to 2007, the latest year for which data are available.

life expectancies in Samoa and American Samoa are lower compared to countries with similar per capita GDP. For example, life expectancy in China exceeds that of Samoa by 2.5 years, and life expectancy in Mexico exceeds that of American Samoa by about 2 years.

At the individual level, various studies have examined a complex relationship between income and health.^{35,36} Whereas higher incomes are positively associated with greater cardiovascular disease risk in Samoa, this association is inverted in American Samoa, ie, lower incomes are associated with greater cardiovascular disease risk. It has been argued that the adoption of Westernized diets and lifestyles help to explain these differences.^{35,37}

Given the greater income of American Samoa, we identified two key puzzles: (1) the lagging (and now lower) health of males and (2) the higher neonatal mortality rates in American Samoa compared to in Samoa. A recent study by Baker and colleagues found that the lower male life expectancy may be explained by higher catecholamine variations, an indicator of stress which is attributed to both psychological and habitual behavioral differences usually related to a higher degree of participation in Western lifestyles in Samoan men.³⁸ Although Baker's catecholamine study focused on men in Samoa, it could be hypothesized that this phenomenon could also be attributed to the greater urbanization in American Samoa (50%) compared to Samoa (20%).^{23,38-41}

Another hypothesis pertains to the role of military and athletic recruitment of American Samoan males, which is among the highest in the nation, leading to significant out-migration.^{42,43} Those who are recruited may be healthier compared to those who stay back, leaving behind a disproportionately unhealthy male population in American Samoa. If males go off-island for higher education and/or health care referrals at higher rates than females, then such out-migration may also be a factor. To our knowledge, formal studies on these topics have not been conducted to date and merit further investigation.

Given the higher GDP per capita of American Samoa, it is puzzling that American Samoa has relatively higher neonatal mortality compared to Samoa. This conundrum is further compounded by the differentially higher coverage of skilled birth attendance in American Samoa, which might be expected to reduce risk of neonatal death. However, obesity is an independent risk factor for neonatal (and maternal) mortality, and hence the higher rates of obesity in American Samoa compared to Samoa may explain some of the differences in neonatal mortality.⁴⁴⁻⁴⁶ Past research by Hawley and colleagues found high levels of weight gain in excess of recommended standards during pregnancy and high levels of overweight and obesity pre-pregnancy in American Samoa.⁴⁷ However, Hawley's study did not explore the association between gestational weight gain and neonatal mortality. Further investigation into the association between gestational weight and neonatal mortality as well as maternal

morbidity in these populations is needed, particularly in relation to socioeconomic status and urbanization.

Policies and political arrangements of the two polities are likely a major factor in explaining these observed patterns of health. German, British, New Zealand, and American colonialism pressured the adoption of Westernized institutional arrangements that differ from the indigenous Samoan system.^{4,7,48-50} The impacts of colonial history encompass expropriation and resource exploitation of indigenous lands, racism, denial of rights, and welfare dependency, which in turn limit opportunities and freedoms to lead healthy lives.⁵¹ Since Samoa's independence and autonomy from colonizing powers in 1962, Samoa may have obtained and utilized the political freedom to reform the Ministry of Health to better reflect the needs of the Samoan community.⁶ In contrast, the effects of continued colonization and its relation to institutional and political arrangements of American Samoa as a determinant of health merits further investigation. The current colonization in American Samoa is linked to the lack of usual democratic freedoms of either US states or nation-states, such as voting representation in any significant federal capacity (even as it competes with other American states for health financing) or in any international capacity such as through multilateral institutions.⁵²

Conclusion

This essay identified key puzzles in population health in the two polities, including the lagging life expectancy of males of American Samoa as well as higher mortality rates due to chronic diseases and higher neonatal mortality rates in American Samoa, despite American Samoa's higher economic development. We hypothesized a variety of potential determinants that may explain these differentials. As Samoan populations are largely genetically homogenous, the differences observed could have resulted from environmental factors that may be altered by informed, culturally appropriate planning.⁵ Future research is needed on the political economy, institutional arrangements, especially in the health care system, and the role of decolonization in generating autonomy for decision making in the health sector.^{36,51} Given the dire lack of consistently available statistical information for analysis, Pacific island countries and territories (supported by the Secretariat of the Pacific Community) should make greater progress in collecting population, economic, and health statistics in order to make policy decisions and support program planning, evaluation, and surveillance.^{19,53}

Conflict of Interest

None of the authors identify a conflict of interest.

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References

- Schwelkendiek D, Pak S. Recent growth of children in the two Koreas: a meta-analysis. *Economics & Human Biology*. 2009;7(1):109-112.
- Kohlmeier L. Health divergence during political division: East and West Germany-socioeconomic factors in health. *Europe without frontiers: The implications for health*. Chichester: Wiley; 1993:57-71.
- Shroff Z, Fan V, Hasan R, Cash RA. An exploratory note on the differences in health in the two Bengals. 2010.
- Ryden GH. *The foreign policy of the United States in relation to Samoa*. New Haven: Yale University Press; 1933.
- Deka R, Mc Garvey S, Ferrell R, et al. Genetic characterization of American and Western Samoans. *Human Biology*. 1994:805-822.
- Stowers P. The experience of reform in the Samoa Ministry of Health. *Papua New Guinea Medical Journal*. 2006;49(3/4):112.
- Weaver MW. The territory federal jurisdiction forgot: the question of greater federal jurisdiction in American Samoa. *Pacific Rim Law and Policy Journal*. 2008;17(2):325.
- Faleomavaega EFH. Some perspectives on American Samoa's political relationship with the United States. *Pacific Studies*. 1990;13(2):119-123.
- Burnett CD. United States: American expansion and territorial deannexation. *The University of Chicago Law Review*. 2005:797-879.
- Curtis M. The obesity epidemic in the Pacific Islands. *Journal of Development and Social Transformation*. 2004;1(1):37-42.
- Linhart C, Carter K, Taylor R, Rao C, Lopez A. *Mortality Trends in Pacific Island States*. Secretariat of the Pacific Community, University of New South Wales, The University of Queensland; 2014.
- Ruidas Lu, Adaoag A, Williams VT, Sesepasara ML. Cancer in American Samoa. *Pac Health Dialog*. 2004;11(2):17-22.
- Nexus Strategic Partnerships Limited. Health systems in Samoa. *Commonwealth Health Online* 2015; http://www.commonwealthhealth.org/pacific/samoa/health_systems_in_samoa/. Accessed April 7, 2015.
- American Samoa Government. *American Samoa Statistical Yearbook 2013*. Pago Pago 2013.
- Customised Reports (Country, Thematic, Disaggregations (Gender, Youth, Urban/Rural), Time-series) National Minimum Development Indicators Version 2.0; 2015. <http://www.spc.int/nmdi/mdireportscustom.aspx?direct=1&indicator=All&group=All&country=116&minorThe me=All&disagg=1>. Accessed April 1, 2015.
- World Development Indicators. The World Bank; 2015. <http://data.worldbank.org/data-catalog/world-development-indicators>. Accessed April 7, 2015.
- Bureau of Economic Analysis. *The Bureau of Economic Analysis (BEA) Releases Estimates of Gross Domestic Product for American Samoa, The Commonwealth of the Northern Mariana Islands, Guam, and the U.S. Virgin Islands*. Washington, D.C.: U.S. Department of Commerce; 2010.
- Ichiho HM, Roby FT, Ponausuia ES, Aitaoto N. An assessment of non-communicable diseases, diabetes, and related risk factors in the territory of American Samoa: a systems perspective. *Hawaii Journal of Medicine & Public Health*. 2013;72(5 Suppl 1):10-18.
- Tauaii M, Quenga J, Samoa R, Samanani S, Dover D. Liberating data: accessing Native Hawaiian and Other Pacific Islander data from national data sets. *AAPI Nexus: Asian Americans & Pacific Islanders Policy, Practice and Community*. 2011;9(1):249-255.
- United States of America. Affordable Care Act. In: Senate, ed 2010.
- Robson B, Purdie G, Cram F, Simmonds S. Age standardisation - an indigenous standard? *Emerging Themes in Epidemiology*. 2007;4(3):1-11.
- Health Databank Samoa. 2011. http://www.wpro.who.int/countries/wsm/29SMAtab2011_final-draft.pdf. Accessed March 14, 2015.
- Health Databank American Samoa. 2012. http://www.wpro.who.int/countries/asm/1_asm_2012_final.pdf?ua=1. Accessed March 13, 2015.
- Government of Samoa. *Population and Housing Census 2011 Analytical Report*. Apia: Samoa Bureau of Statistics; 2011.
- American Samoa Government. *American Samoa Statistical Yearbook 1998-1999 Combined*. Pago Pago: Department of Commerce; 1999.
- American Samoa Government. *American Samoa Statistical Yearbook 2003 & 2004*. Pago Pago: Department of Commerce; 2004.
- American Samoa Government. *American Samoa Statistical Yearbook 2012*. Pago Pago: Department of Commerce; 2012.
- Government AS. *American Samoa Statistical Yearbook 1996*. Pago Pago: Department of Commerce; 1996.
- American Samoa Government. *American Samoa Statistical Yearbook 1997*. Pago Pago: Department of Commerce; 1997.
- Mathers CD, Sadana R, Salomon JA, Murray CJ, Lopez AD. Healthy life expectancy in 191 countries, 1999. *The Lancet*. 2001;357(9269):1685-1691.
- Health profiles - Samoa. 2014. <http://hiip.wpro.who.int/portal/Countryprofiles/Samoa/Health-Profiles/TabId/198/ArtMid/1040/ArticleID/107/Default>. Accessed March 13, 2015.
- Health profiles - American Samoa. World Health Organization; 2014. <http://hiip.wpro.who.int/portal/CountryProfiles/AmericanSamoa/HealthProfiles/TabId/173/ArtMid/921/ArticleID/37/Default>. Accessed March 13, 2015.
- Compare maternal health indicators Polynesia public health. National Minimum Development Indicators Version 2.0; 2013. http://www.spc.int/nmdi/maternal_health. Accessed April 5, 2015.
- Preston SH. The changing relation between mortality and level of economic development. *Population Studies*. 1975;29(2):231-248.
- Ezeamama AE, Viali S, Tuitele J, McGarvey ST. The influence of socioeconomic factors on cardiovascular disease risk factors in the context of economic development in the Samoan archipelago. *Social Science & Medicine*. 2006;63(10):2533-2545.
- McLennan AK, Ulijaszek SJ. Obesity emergence in the Pacific islands: why understanding colonial history and social change is important. *Public Health Nutrition*. 2014:1-7.
- Galanis DJ, McGarvey ST, Quested C, Sio B, Aafele-Fa'amuli S. Dietary intake of modernizing Samoans: implications for risk of cardiovascular disease. *Journal of the American Dietetic Association*. 1999;99(2):184-190.
- James G, Baker P, Jenner D, Harrison GA. Variation in lifestyle characteristics and catecholamine excretion rates among young Western Samoan men. *Social Science & Medicine*. 1987;25(9):981-986.
- Population & demographic indicators. Secretariat of the Pacific Community; 2013. <http://www.spc.int/sddl/>. Accessed March 13, 2015.
- World Health Organization, American Samoa Department of Health, Monash University. *American Samoa NCD Risk Factors STEPS Report*. Suva 2007.
- Government of Samoa. *Annual Report Financial Year 2010-2011*. Apia: Ministry of Health; 2011.
- Chen B. Am. Samoa Army Recruiting Station Ranked #1 In The World. *Pacific Islands Report* 2014.
- CBS. American Samoa: Football Island. In: Pelley S, ed. *60 Minutes*: cbsnews.com; 2010.
- Guelinckx I, Devlieger R, Beckers K, Vansant G. Maternal obesity: pregnancy complications, gestational weight gain and nutrition. *Obesity Reviews*. 2008;9(2):140-150.
- Khan KS, Wojdyla D, Say L, Gülmezoglu AM, Van Look PF. WHO analysis of causes of maternal death: a systematic review. *The Lancet*. 2006;367(9516):1066-1074.
- World Health Organization. *Samoa STEPS Survey*. <http://www.who.int/chp/steps/reports/en/>: Western Pacific Region; 2002.
- Hawley NL, Johnson W, Hart CN, et al. Gestational weight gain among American Samoan women and its impact on delivery and infant outcomes. *BMC Pregnancy and Childbirth*. 2015;15(1):10.
- McMullin DT. The passive resistance of Samoans to U.S. and other colonialisms. In: Barker J, ed. *Sovereignty matters: Locations of contestation and possibility in indigenous struggles for self-determination*. Lincoln: U of Nebraska Press; 2005.
- Bindon JR. Taro or rice, plantation or market: dietary choice in American Samoa. *Food & Foodways*. 1988;3(1):59-78.
- Bindon JR. Breadfruit, banana, beef, and beer: modernization of the Samoan diet. *Ecology of Food and Nutrition*. 1982;12(1):49-60.
- Alfred T. Colonialism and state dependency. *Journal de la santé autochtone*. 2009;5:42-60.
- United States Congress. *Investigation into Health Care Disparities of US Pacific Island Territories: Hearing Before the Subcommittee on Human Rights and Wellness of the Committee on Government Reform, House of Representatives, One Hundred Eighth Congress, Second Session, February 25, 2004*. Washington D.C. 2004.
- Secretariat of the Pacific Community. A Pacific Island region plan for the implementation of initiatives for strengthening statistical services through regional approaches, 2010 – 2020. *Statistics 2020 – Developing Sustainable National and Regional Statistical Capacities, Regional Meeting of Heads of Planning & Heads of Statistics (HOPS)*; 2010; Noumea, New Caledonia.