Youngsters and Their New-Fangled Gadgets:

How Children in a Household Helped Spread Ownership of Radios

Aubrey Samost
21H.931
Professor Capozzola
May 15, 2009

Picture for a second a happy family gathered around the brand new radio set – not a fancy radio set, of course; it is more of a collection of wires and vacuum tubes or crystals. They sit in a circle with the headphones volume turned up and the headphones physically located in a pot to make the sounds echo, allowing the whole family to hear because the speakers were too expensive for them to buy. In the more expensive house down the street, the family gathers around a handsome mahogany cupboard disguising the conglomeration of wires and vacuum tubes, hearing the same radio shows issuing from an expensive speaker system. These scenes were the images of a widespread radio culture in the late 1920s and into the 1930s encompassing lower, middle, and upper class families. However, as quintessential as this image may seem, it was not necessarily the norm. In some communities, such as several neighborhoods in Boston, less than one in five households owned a radio.

What slowed down the spread of the radio? Advertisers painted the radio as a necessary household item, but in reality there were many households without electricity or lacking the income to purchase a radio. The composition of the household had a large impact on whether the family would own a radio. More children in a household made it more likely that a family would want to own a radio, but conversely, more children made it less feasible economically for a family to purchase and maintain a radio. This balance served to limit radio ownership and the spread of this new technology. The entertainment value of the programming made the radio an appealing appliance, but during the 1930s, the price could still be prohibitive for lower income families.

1930 Census Data and Analysis[1]

The radio started gaining in popularity in the 1920s. The systems of signal transmitters and receivers were still fairly low powered, so therefore programming was locally based. Radio stations were strong when the receiver was located within 3 miles of the transmitter; reception was patchy but good up to 15 miles out, and static-y up to a distance of 150 miles from the transmitter.[2] In the late 1920s improvements in radio technology increased the distance over which a signal could be passed, allowing for more national programming. At the time of the national census, radios were growing in popularity with more households buying them to tune in to the new popular national programming. This trend prompted the government to include radio ownership as an item on the 1930's census. This fact makes the census an ideal source to work with because we can use this data to correlate radio ownership with other aspects of the households.

For this study, I selected two communities – South Boston, in Boston, Massachusetts and Analy, in Sonoma County, California. South Boston was an urban area of mostly immigrants. The most common countries of origin were Russia, Ireland, and Poland, but there were also Greeks, Italians, and Swedes in the neighborhood. Additionally, these families tend to be poorer, but that was not always the case. One man in South Boston owned his house and kept seven servants who lived in the house with him. However, overall this was a poorer, urban area compared to Analy, CA.

[1] Source for all data in this section unless otherwise noted: 1930 US Census for Analy, Sonoma County, CA and South Boston, Boston, Suffolk County, MA.
[2] Lizabeth Cohen, *Making a New Deal: Industrial Workers in Chicago 1919-1939*, (Cambridge, UK: Cambridge University Press, 1990), 133.

Analy, CA was a small, rural community. The majority of the people lived on farms and had their occupation listed as farming. Despite the farming majority, the community appeared to be a lot wealthier than South Boston. More people owned their houses, and there were fewer immigrants overall. The few immigrants in Analy, however, represented approximately the same countries as the immigrants in South Boston.

Figure 1: Radio ownership data

	# Households owning a radio	Total # Households	% Households owning a radio
South Boston	28	163	17.2%
Analy	48	85	56.5%

Figure 1 shows the percentage of households in each community owning a radio. Analy has a drastically higher percentage of radio ownership than Boston. The reason for this difference is not readily apparent. However, economic differences are the most likely candidate for the reason behind this anomaly. While the census did not directly measure the household income, several other pieces of data collected indirectly suggest the income and economic status of a household. Residents of Analy owned their own homes more frequently than did residents in South Boston, who were more likely to rent. Additionally, people in Analy typically worked as farmers and farm managers compared to the people in South Boston working in factories. Besides seeing relatively few households owning a radio, the few homes with a radio showed no correlation to other factors such as number in the household or the age of the children; radio ownership in Analy suggested correlations with both of these parameters. These findings suggest an underlying factor affecting radio ownership in Boston that was not studied in this research.

In Analy, the majority of the households owned a radio and illustrated some of the interesting trends with the ages of the household members and size of the household. None of the age data showed differences outside of the standard deviation of the sample, but they strongly suggested a correlation between these household factors and radio ownership if one looked at a larger population of communities similar to Analy.

Figure 2: The average ages of people in the household

	Age of the head of the household (years)	Average age of the children in the household (years)	% of households with children
Households owning a radio	46±10	11±4	58.3%
Households not owning a radio	56±13	8±4	35.1%

The most interesting statistic is the large difference in the percentages of child-inclusive households owning and not owning a radio. These data strongly suggest that having children in the household increases the likelihood of the family buying a radio. The other data are interesting and close to showing statistical significance. Households owning a radio tended to have younger parents with slightly older children, while households not owning a radio were more likely to be either older people without children, or younger families with younger children, as suggested by Figure 2.

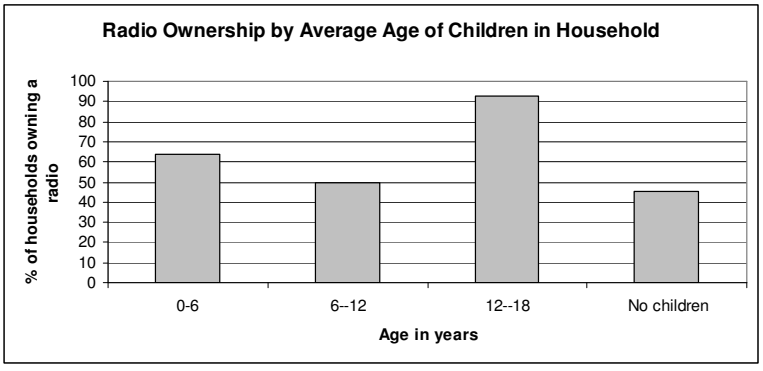

Figure 3: Radio ownership as a function of average age of children[3]

Having children was not the only important factor in determining

[3] Total values for each bracket:
0-6 -- 11 households
6-12 -- 16 households
12-18 -- 14 households
No children -- 44 households

if a family owned a radio. The age of the children played a large role in the family's decision to purchase a radio. Families with older children in the range of twelve to eighteen years old were far more likely to have a radio compared to families with toddlers or elementary-school-aged children. The histogram in Figure 3 shows relatively little difference in radio ownership between households with no children and those with younger children. However, households with older children showed a far higher likelihood to own a radio.

Several factors might explain why older children made it more likely that a household would own a radio. The first idea is that older children could work, adding an additional income to the household. This made it more economically feasible for the family to purchase a radio. The other possibility is that older children feel a lot of social pressure to be popular and keep up with other students. If everybody in school owned a radio, an older child may have tried to push his or her parents into purchasing a radio to be socially accepted. Finally, older children lived in families that had been together longer and may have taken the time to save funds and could afford a radio. The prerequisites, however, for any of these theories to apply are the physical capabilities to own a radio, namely access to electricity to power a radio and the economic capabilities to purchase a radio.

Access to Electricity

Any correlations of radio ownership with the number of children in the family would be meaningless if the community lacked access to electricity. Radios at this time relied on household electricity, unlike the battery-powered radios of today. Electricity had not yet spread to all of the households in the US by the time of the 1930's census.

Thomas Edison built the first electric generator in the United States in New York in September 1882. This generator worked over short distances and transmitted power using direct current (DC). Edison's set up was quickly replaced by Nikola Tesla's and George Westinghouse's alternating current (AC) system. By 1930 almost all cities had electricity. Rural areas, however, received electricity slowly.[4] In 1935, Franklin Roosevelt signed the Rural Electrification Administration, which sought to bring electricity to the farms. The cities received electricity first because cities provided a higher profit to electric companies. They could reach a large number of customers with lower utility costs due to the population density of their customers. When President Roosevelt passed this act, only about 10% of farms had electricity.[5] Additionally, in 1927, 1.3% of the electric current sold went to farms compared to 11.2% going towards domestic service.[6]

This general history of electricity availability suggests that residents of South Boston in 1930 had easy access to electricity. However, it remains more uncertain whether households in Analy, California had electricity for domestic applications. Based upon the numbers of households owning radios in Analy, it seems likely that a majority of households had electricity.[7] Additionally, the amount of electricity generated in California increased 61.9% between 1922 and 1927, and the number of customers

---

[4] Energy Information Administration, "Electricity," History of Energy in the United States: 1635-2000, http://www.eia.doe.gov/emeu/aer/eh/frame.html.

[5] "The New Deal: Agricultural Recovery," Encyclopedia Britannica Inc., http://www.britannica.com/EBchecked/topic/512965/Rural-Electrification-Administration (accessed April 26, 2009).

[6] The electricity census was not completely clear regarding what constituted a farm compared to a domestic use of electricity. It is possible that people living on a farm were separated out into electric usage for the farm operations and electricity used in the house for domestic applications.
Source: R.P. Lamont and W. M. Steuart, *Census of Electrical Industries: 1927 Central Electric Light and Power Stations,* (Washington, DC: United States Government Printing Office, 1930).

[7] 56.5% of households (48 out of 85 households) owned a radio in Analy, CA. Source: 1930 US Census for Analy, Sonoma County, CA

receiving electricity increased 59.8% to about 1.8 million households during that same time period.[8] Despite the low percentage of farms with electricity in 1930, given the above numbers, households in Analy most likely had access to electricity. Therefore, electricity was not a factor limiting the ownership of radios in most households in the area.

Economic and Technical Considerations

Factors other than electricity also led families to decide not to purchase a radio. A family could not just go buy a radio on a whim; it was an expensive luxury item. There was a significant economic barrier associated with purchasing a radio. To complicate the situation, the 1930's were a time of economic hardship, with unemployment hitting nearly 25% at one point. Of those lucky people with a job, 557,314 people worked in the manufacturing industry in the state of Massachusetts in 1929. Compare that to California, where only 282,859 people held jobs in manufacturing during the same time period.[9] California, however, had a larger population working in farming with respect to Massachusetts; a majority of the residents in Analy worked on a farm based on the 1930 census. The median earnings for a farmer were about $500 annually, while working in a factory or manufacturing job earned a person about $1000 annually in 1939.[10] This seems like a fairly large difference, but the data for farmers apply to people working on a farm, not necessarily owning their own farm, as was the case with most households in Analy. Therefore, it appears safe to assume that the household income for a family in Analy was probably higher than the $500 per year predicted based on these data.

---

[8]Lamont and Steuart, *Census of Electrical Industries: 1927 Central Electric Light and Power Stations,*

[9]Harold D. Kube and Ralph H. Danhof, *Changes in Distribution of Manufacturing Wage Earners: 1899-1939*, (Washington, DC: United State Government Printing Office, 1942).

[10]US Department of Commerce and Bureau of the Census, *Income Growth Rates in 1939 to 1968 for Persons by Occupation and Industry Groups, for the United States,* (Washington, DC: 1970).

A household's total income was not just the wages quoted above. Instead the household income was based on the number of people in the household holding down a job. Children as young as fourteen would start working, especially if they chose not to attend high school. However, children working at this age tended not to put their money to use for the family. They instead preferred to buy commodities for themselves, such as trendy new clothes[11]. Therefore, the household income that went towards the family can be roughly estimated as the number of people above the age of eighteen living in the house. The adults were more likely to be contributing economically to the household than younger workers. Frequently, households would include parents and children plus occasionally boarders and siblings of the head of the household. The average number of income-earning people in a household can be approximated by subtracting the average number of children in a household from the average number of people in a household. Based on the sampling of the 1930 census, this gives 2.2 people per household in both Analy and South Boston. The median household could therefore be expected to bring in an annual income of approximately $1100-$2200 depending on what jobs people worked at.

In 1930, radios could cost a family as low as about $75[12] to as much as almost $200.[13] Ads frequently ran in the newspapers touting sales on radios, claiming that it's 40% off, only put $10 down, or free installation. These ads needed to be very persuasive and convincing. Radios were expensive, so companies selling them went to great lengths to try to make them available to the average person. If a household is earning only $1100

[11] Cohen, *Making a New Deal: Industrial Workers in Chicago 1919-1939*. 144.
[12] This is about $960 in 2008 currency. Source: Mandel Brothers, C*hicago Daily Tribune* January 01, 1930, 19.
[13] In 2008 currency, this would be about $2555. Source: Commonwealth Edison's Electric Shops, *Chicago Daily Tribune* March 24, 1930, 17.

or $2200, why should they want to spend 10% or more of their income on an unnecessary device?

Radios in 1930 appear so different from their modern counterparts as to seem unrelated. The advertisements show sleek wooden cabinets "worthy of any living room."[14] The popular design of the time was a cabinet made of wood housing the machine itself. Radios were pieces of furniture and were marketed as such. These ads gave equal emphasis to the sound quality or the technical specifications as they did to the aesthetic concerns of the cabinet housing the tubes, speakers, and wires. This marketing suggested that the popularity of radio sets grew from both the novelty of the entertainment as well as the status symbol of having a handsome radio set in one's living room.

Underneath the chic façade, the radios of 1930 showed technological improvements from early radio sets, yet remained inconsistent in performance. The original radios came from the work of Heinrich Hertz, who first experimentally proved the existence of electromagnetic waves other than light. The first radio design by Guglielmo Marconi was slow and had to be reset with each signal sent. Scientists improved on this design by using a crystal receiver, which did not require resetting, allowing for signals to be sent more quickly. By 1920 the crystal receiver was replaced by a vacuum system called a triode. The triode allowed for signal amplification, as well as providing a quick response to the signal received.[15] This technological breakthrough allowed for the first radio transmission – the 1920 Presidential election between James Cox and Warren Harding. Radios quickly grew in popularity, spreading out to Chicago

[14] Commonwealth Edison's Electric Shops, *Chicago Daily Tribune* March 24, 1930, 19.
[15] Marc Ellis, "History of Radio Detectors," *Popular Electronics,* Aug 1996.

within a year and continuing to move from city to city across the country[16]. Radio stations spread from local, low-power broadcasts, to high-power, national programming.

By 1930 radios used a series of vacuum tubes to receive electromagnetic waves from across the country and translate them into music and other programming. The modern radios of 1930 used nine vacuum tubes to produce a better quality sound and a greater volume control compared to slightly older radio sets with approximately six tubes[17]. Even these modern radios were only simple collections of vacuum tubes, wires, and speakers housed in a wooden cabinet; of these components, the vacuum tubes proved to be the most fragile. They were sold in most department style stores for prices in the range of five to six dollars. This figure depended on exactly what type of vacuum tube was needed and where the tubes were purchased. Some larger department stores, such as the Boston Store in Chicago, IL carried radio tubes for cheaper, while specialty radio stores stocked radio tubes at slightly higher prices.[18] The fragility of these machines introduced an annual cost for owning a radio, which had to be factored in to a family's budget.

Despite the fragility of these devices suggested by the availability of the vacuum tubes, the workmanship of the radios was a point of pride in many of the ads. For example, Mandel, a store selling Earl Radios, guaranteed the radios and provided assistance in installation of the radio.[19] The availability of these types of resources at least meant that repairing a radio was logistically and technically easy, even if not economically easy for a household.

---

[16] Cohen, *Making a New Deal: Industrial Workers in Chicago 1919-1939.* 129.
[17] Mandel Brothers, C*hicago Daily Tribune* January 01, 1930.
[18]Commonwealth Edison's Electric Shops, *Chicago Daily Tribune* March 24, 1930, 19.
[19] Mandel Brothers, C*hicago Daily Tribune* January 01, 1930.

When a household decided whether to purchase a radio set, these economic and technical considerations definitely played a large role. The cost for a radio was huge relative to the average household income. A household could potentially spend almost 20% of its annual income on this one piece of equipment. However, many stores offered plans to pay for the radio over a longer period of time. To put these expenditures in perspective, the average family in Chicago in the 1920s spent $22.56 each year to see movies in the local theater. They considered this expenditure to be a good sized piece of their family entertainment budget. To afford a radio, they would need to spend over three times that amount, which most likely meant giving up other commodities. While a family might be able to afford a radio, there had to be a compelling reason for them to want to spend this money to buy one. Children here become a big force in pushing families to purchase a radio. Teenagers especially enjoyed the programming and the social status gained by owning a radio. As long as a family did not have too many children to support, they could afford a radio and they were far more likely to want a radio and the opportunity to partake of this novel form of entertainment.

Radio Programming

Radio programming changed drastically from the introduction of radio in the early twenties through to the thirties. When radios first became available to the public, the companies made their money off of selling the hardware, the radios. They assumed that people would want to buy radios because the programming would be something interesting. The profits from the radio sets would then fund the programming, most of which was local.[20] The programming included such things as religious and ethnic shows, as well as popular music and local news. Most cities also had a "silent night" where there

[20] John McDonough, "Radio: A 75-year roller-coaster ride," *Advertising Age* 22(1995).

would not be any local programming, so households could pick up radio shows from some of the larger cities, such as New York.[21]

In the early twenties this business model was feasible if not sustainable; once everybody had purchased a radio, profits would decrease, yet people would expect the same high quality programming. AT&T came up with the solution to this conundrum—advertising. They started selling airtime to companies in New York, and the idea quickly caught on once people saw the success these companies enjoyed.[22]

By 1930 broadcasting and advertising were intimately related. The quality of the programming greatly increased as a result. Large companies and businesses would sponsor shows, including such famous shows as "Eveready Hour" and the "Michelin Troubadours." Companies put an immense amount of effort into producing a quality radio show. They spent a lot of money to get the best actors in the country on their show. These businesses hoped that having their name associated with a well-loved radio show would increase their customer base.[23] As a result of advertising and technological advances, radio programming became a nationally popular media. Producers hired big-name stars and reached a national audience for the first time.

Because of the nationalization of radio programming, the entertainment and social value of a radio sky-rocketed in the thirties, making the purchase of a radio set ever more appealing to families. Radios offered chic cultural programming for the adults, operas and concerts from New York broadcast across the country, politics for the well-educated, comedy for the children, and popular music for the teenagers. Looking at the

---

[21] Cohen, *Making a New Deal: Industrial Workers in Chicago 1919-1939.* 135.
[22] McDonough, "Radio: A 75-year roller-coaster ride.".
[23] Ward Hanson, "The original WWW: Web lessons from the early radio days," *Journal of Interactive Marketing* 12 (1998): 48.

entertainment and programming available it can explain why families with more children would want to purchase a radio. Provided the cost is not prohibitive, a radio can provide a simple way to help entertain children and keep the household abreast of current affairs.

Societal Forces

Beyond the entertainment value, children at this time were under a lot of social pressure. Children felt most of this pressure as the pressure to be popular – to dress in trendy clothes, to own trendy items. This increasing societal pressure is especially due to the increase in students enrolling in high school instead of dropping out at this time. In 1924, in smaller middle-class towns, there were significantly more students completing high school than just 35 years earlier. In one small town, graduating class size increased from 14 in 1890 to 286 in 1924.[24] Being in high school helped to make teenagers associate with each other more. These friendships led to teens wanting to buy trendy clothing or listen to popular music to fit in. Being around each other put pressure on the individual to fit in with a group that twenty years ago he or she might never have spent time with. Owning a radio helped a student fit in with the group and lessened this social pressure.

Evidence of this social pressure could be seen in the non-negligible dropout rate from high school. In a study in the 1920's, students cited several common reasons for dropping out including needing to help out around the house, having a sick parent, and not feeling like he or she fit in.[25] Students not owning a radio would have been at a distinct social disadvantage and may have had trouble relating to their peers in school.

---

[24]Robert S. Lynd and Helen Merrell Lynd, *Middletown: A Study in Modern American Culture,* (San Diego: Harcourt Brace & Company: 1929), 183.

[25] Lynd andLynd, *Middletown: A Study in Modern American Culture*. 186.

Therefore, the school age children potentially could put a lot of pressure on parents to buy a radio, directly illustrating how children can increase the likelihood of a family owning a radio.

Conclusion

So many factors go into a family's decision to make a large purchase, and buying a radio in 1930 for most families qualified as an extremely large purchase. Children, as the stereotypically technology-savvy generation, played a large role in this decision. Through their interactions with other children and teenagers they came under great societal pressure to purchase a radio. They could get access to popular music as well as more family-friendly programming, including ethnically based programming. This made purchasing a radio very appealing for families. However, on the other side, radios could cost a family almost 20% of their yearly income. This is a significant expenditure compared to the roughly 1-2% spent on seeing a movie in the local theater. If a family has a lot of children, they may really want to purchase a radio, but likely cannot afford this expenditure. Food and shelter come first, especially in financially insecure times like the late twenties and early thirties.

This theory, while neat and elegant, does not explain all of the factors at work in leading a family to purchase a radio set. This work only looked at several factors in the household. It failed to look in depth at the economic situation of households, their occupations, nation of origin, and other potential factors contributing to radio ownership. In Boston, for example, the data suggested that there were other underlying factors leading to the low percentage of households owning a radio. This research really only looks at one small component of a multifaceted and complex problem. However, the

household and family component clearly played a large role in increasing the popularity of the radio.

Appendix: Methods

Data were gathered from two communities using scans of the original 1930 census. The data were from Analy, California selected as a more rural, yet wealthy area. The majority of households were farms and the main occupation of people in the town was farming. However, the best judgment that can be made from the census data regarding wealth of a town is based on homeownership. A greater percentage of people in Analy owned a home instead of renting, suggesting that people in Analy were representative of the middle to upper class range. When running statistics for Analy, I used all of the households in the community. It was a relatively small community with 85 households.

Boston, Massachusetts was the other community selected as an example of an urban environment. In particular, the data came from the neighborhood of South Boston, an area with more immigrants, and generally a bit poorer. Again, that assumption is based on the homeownership data. A greater percentage of households sampled in Boston rented their homes, suggesting that this neighborhood was not as wealthy as Analy, California. For running statistics in Boston, it was not practical to take all of the households in Boston, representing approximately 500 households. Sampling was randomly done by pulling census pages until reaching a sample size of 163.

Selecting what data to include was difficult. The data that I could find from the 1930 census was in the form of scanned copies of the original documents instead of logged in a spreadsheet. Because of time constraints, I could not log all of the

information for each topic. Using the hypothesis that radio ownership was correlated with household composition I decided to look at the age of the head of the household, the number of children, the age of the children, and the total number in the household. In the two communities that I researched, neither of these values showed statistically significant differences between the group owning a radio and the group not owning a radio. However, the data for Analy showed a correlation, which was almost significant. I chose the numbers before running the statistics and thus am limited by my prior assumptions in this paper.

For this research, a child was defined as a member of the household younger than 18 years old, regardless of his or her relationship to the head of the household. This included grandchildren, nieces and nephews, and occasionally a young boarder. Members of the household included relatives of the head of the household as well as boarders and live in servants when applicable. The mean values for each category were calculated as unweighted, geometric means. The standard deviations were calculated using Excel formulas.

There were a lot of assumptions made when looking at access to electricity in these communities. Unfortunately, the 1930 Census did not contain any information regarding the availability of electricity by household. Instead, I turned to the Electrical Census of 1927, which looked at electrical production and consumption by state. This provided circumstantial evidence that these communities likely had electricity. Additionally, given the high percentage of households owning a radio in Analy, it seems fair to assume that they had access to electricity. Boston, being a large urban community most likely had access to electricity as well, given the simplicity with which electric

companies could wire cities. Unfortunately, these are still fairly large assumptions to make that could throw these conclusions into doubt without further evidence.

Bibliography

1930 US Federal Census. 1930.

Cohen, Lizabeth. *Making a New Deal: Industrial Workers in Chicago 1919-1939*. Cambridge, UK: Cambridge University Press, 1990.

Commonwealth Edison's Electric Shops. *Chicago Daily Tribune* March 24, 1930.

Ellis, Marc. "History of Radio Detectors." *Popular Electronics,* Aug 1996.

Energy Information Administration. "Electricity." History of Energy in the United States: 1635-2000. http://www.eia.doe.gov/emeu/aer/eh/frame.html (accessed April 26, 2009).

Hanson, Ward. "The original WWW: Web lessons from the early radio days." *Journal of Interactive Marketing* 12 (1998): 46-56.

Kube, Harold D. and Ralph H. Danhof. *Changes in Distribution of Manufacturing Wage Earners: 1899-1939*. Washington, DC: United State Government Printing Office, 1942.

Lamont, R.P., and W. M. Steuart. *Census of Electrical Industries: 1927 Central Electric Light and Power Stations*. Washington, DC: United States Government Printing Office, 1930.

Lynd, Robert S. and Helen Merrell Lynd. *Middletown: A Study in Modern American Culture.* San Diego: Harcourt Brace & Company, 1929.

Mandel Brothers. C*hicago Daily Tribune* January 01, 1930.

McDonough, John. "Radio: A 75-year roller-coaster ride." *Advertising Age* 22(1995).

"The New Deal: Agricultural Recovery." Encyclopedia Britannica Inc. http://www.britannica.com/EBchecked/topic/512965/Rural-Electrification-Administration (accessed April 26, 2009).

US Department of Commerce and Bureau of the Census. *Income Growth Rates in 1939 to 1968 for Persons by Occupation and Industry Groups, for the United States*. Washington, DC: 1970.