The Changes in the Republican Presidential Candidates' Wikipedia Articles Leading Up to Super Tuesday 2012

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Abstract

Throughout its more than 11 years of existence, many librarians, professors, and teachers, among countless others, have been wary of Wikipedia due to its seemingly unregulated nature and the fact that anyone can make changes to its articles. Although many of these justifiably skeptical professionals have become more accepting of Wikipedia as a good source for finding a general overview of a topic, there continues to be a great deal of distrust in the site’s accuracy. Articles on politicians and controversial issues are often seen as even less reliable than other types of articles since they are thought of as particularly attractive targets for vandalism by those who do not agree with the individuals or concepts that serve as the subject.

By the time that the campaign for the 2012 Republican nomination for president reached March 6—Super Tuesday—four candidates remained in the race: Newt Gingrich, a former Speaker of the House of Representatives; Ron Paul, a member of the House of Representatives and former presidential nominee of the Libertarian Party; Mitt Romney, a former governor of Massachusetts; and Rick Santorum, a former member of the Senate. For this paper, I examined the revision histories of the Wikipedia articles for these four candidates for the period beginning on February 21 and ending on March 7 in order to include any revisions that were made soon after the March 6 election results were announced. I looked for instances in which inaccurate, misleading, or malicious information was added and observed how long it took for that information to be removed. I also studied the other changes that were made, such as the addition of new information, the removal of existing information, and the rewriting of passages of text, and attempted to identify any major similarities or differences in the treatment of the four articles. I concluded that the articles were generally reliable since vandalism was removed very quickly and questionable information was usually removed or revised fairly quickly. Not many changes were made due to current events. A large number of the revisions that were done involved issues of word choice, punctuation, and formatting and did not affect the substantive content of the articles.
The Changes in the Republican Presidential Candidates’ Wikipedia Articles Leading Up to Super Tuesday 2012

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Introduction

Throughout its more than 11 years of existence, many librarians, professors, and teachers, among countless others, have been wary of Wikipedia due to its seemingly unregulated nature and the fact that anyone can make changes to its articles. Although many of these justifiably skeptical professionals have become more accepting of Wikipedia as a good source for finding a general overview of a topic, there continues to be a great deal of distrust in the site’s accuracy. Articles on politicians and controversial issues are often seen as even less reliable than other types of articles since they are thought of as particularly attractive targets for vandalism by those who do not agree with the individuals or concepts that serve as the subject.

A relatively early incidence of Wikipedia vandalism that attracted some publicity involved John Seigenthaler, who has served in numerous prominent positions as a journalist, political figure, and publisher. On May 26, 2005, an anonymous user created a Wikipedia article for Seigenthaler. The short article contained the false information that he had been suspected of involvement in the assassinations of both John F. Kennedy and Robert F. Kennedy and that he had lived in the Soviet Union from 1972 to 1984. Seigenthaler had actually been a close advisor to both Kennedys and was never suspected of any wrongdoing. The inaccurate article remained on Wikipedia for almost four months until it was removed by a colleague of Seigenthaler on September 23, 2005, shortly after the article had been brought to Seigenthaler’s attention. The material was replaced with text from his biography at a different website. This was removed the next day because of copyright infringement issues and replaced with a small amount of basic, original text. Later, the first two versions of the article were completely removed from the Wikipedia site, so the first version currently available in the article’s history is the first revision.

Seigenthaler began speaking publicly about this incident, criticizing both Wikipedia and Congress. In a November 30, 2005 editorial in USA Today, for which Seigenthaler had served as the founding editorial director, he blasted Wikipedia as a “flawed and irresponsible research tool” (Seigenthaler, 2005). He also pointed out that under the Communications Decency Act of 1996, “online service providers cannot be sued for disseminating defamatory attacks on citizens posted by others” (Seigenthaler, 2005). In the following days, both Seigenthaler and Jimmy Wales, the founder of Wikipedia, made several media appearances (some jointly) to discuss the controversy (“Wikipedia biography controversy,” 2012).

Methodology

By the time that the campaign for the 2012 Republican nomination for president reached March 6—Super Tuesday—four candidates remained in the race: Newt Gingrich, a former Speaker of the House of Representatives; Ron Paul, a member of the House of Representatives and former presidential nominee of the Libertarian Party; Mitt Romney, a former governor of Massachusetts; and Rick Santorum, a former member of the Senate. For this paper, I examined the revision histories of the Wikipedia articles for these four candidates for the period beginning on February 21 and ending on March 7 in order to include any revisions that were made soon after the March 6 election results were announced. I looked for instances in which inaccurate, misleading, or malicious information was added and observed how long it took for that information to be removed. I also studied the other changes that were made, such as the addition of new information, the removal of existing information, and the rewriting of passages of text,
and attempted to identify any major similarities or differences in the treatment of the four articles.

Newt Gingrich’s Article

Including the version that was current at the beginning of February 21 (using Greenwich Mean Time, as Wikipedia uses unless someone is logged in and has designated a time zone), Newt Gingrich’s page existed in 40 different versions through the end of March 7 (in other words, 39 page revisions were made between February 21 and March 7). The first edit, which occurred at 2:02 a.m. on February 21, was fairly significant. The phrase “politically motivated” was added in reference to House ethics charges against Gingrich, and information about a reprimand that Gingrich received was removed (“Newt Gingrich,” 2012a). The same user who made that edit, Guck14, made five more over the next several minutes, ending at 2:20 a.m. The user removed the sentence about ethics charges, removed another sentence that referred vaguely to controversies and Gingrich’s declining popularity leading up to his resignation from the speakership and the House itself; and added text blaming Gingrich’s fall in the polls in December 2011 on the negative advertisements run by his opponents (“Newt Gingrich,” 2012b; “Newt Gingrich,” 2012c; “Newt Gingrich,” 2012d; “Newt Gingrich,” 2012e; “Newt Gingrich,” 2012f). Though many of these edits could be considered sympathetic to Gingrich, there were no subsequent edits that countered them. The next edit did not occur until February 24, when someone added a comma after a short prepositional phrase, where it was optional but not necessary (“Newt Gingrich,” 2012g). Another long period of stability followed until someone replaced the word “Congress” with “The House” on February 29. This seemed to be an
appropriate change since it preceded a reference to the Senate as a separate body (“Newt Gingrich,” 2012h). Several days passed without any revisions to Gingrich’s page.

Beginning on March 5, editing activity increased greatly. With the first edit on that date, someone replaced one appearance of Gingrich’s name with “Human Whale,” changed his year of birth to “1024,” and replaced the names of his spouses and marriage dates with “Subject to Change” (“Newt Gingrich,” 2012i). This clear act of vandalism was corrected just one minute later by an anonymous user who simply undid the revision, reverting the page back to what it was two minutes beforehand (“Newt Gingrich,” 2012j). Sixteen minutes later, a different vandal added “BLEEP BLOP BLORP GAY MARRIAGE LOL N-WORD JAMES OLMOS LIKE THIS IF YOU AGREE”; this change was caught by a bot (an automated program) and removed in less than a minute (“Newt Gingrich,” 2012k; “Newt Gingrich,” 2012l).

Later on March 5, a user added some additional information, including a reference, about Gingrich’s conversion to Roman Catholicism (“Newt Gingrich,” 2012m). Half an hour later, a different user made a change to the International Phonetic Alphabet (IPA) pronunciation of “Newt” (“Newt Gingrich,” 2012n). The final edit of March 5 was a technical change that did not affect the article’s content; it was described by the editor as “removing a protection template from a non-protected page” (“Newt Gingrich,” 2012o).

At 2:37 a.m. on March 6, someone inserted the sentence, “He is a cheating piece of shit whose face looks like the back of a fat woman’s knee” (“Newt Gingrich,” 2012p). This vandalism was again caught by the same bot and removed just one minute after it was added (“Newt Gingrich,” 2012q). Within a minute, the vandal again inserted the same sentence, and it remained on Gingrich’s page for 15 minutes until another user reverted the page back to the bot’s revision (“Newt Gingrich,” 2012r; “Newt Gingrich,” 2012s). No edits occurred for more than an
hour and a half. At 4:32 a.m., someone added the word “stuffs” with no obvious purpose (“Newt Gingrich,” 2012t). One minute later, the page was returned to its previous incarnation by a user (“Newt Gingrich,” 2012u). No changes were made for more than 16 hours during Super Tuesday. At 9:01 p.m., an anonymous user added information about Gingrich being born as an actual newt (though “newt” was misspelled) and then becoming a human at the age of seven (“Newt Gingrich,” 2012v). This vandalism was removed by another user one minute later (“Newt Gingrich,” 2012w).

The first edit of March 7, occurring at 1:31 a.m. (while Super Tuesday voting was still occurring in many parts of the United States), involved the removal of the letter P from one appearance of Gingrich’s last name at birth, McPherson (“Newt Gingrich,” 2012x). This nonsensical vandalism lasted for six minutes before being removed by an editor (“Newt Gingrich,” 2012y). The same person added the title “Father” before the name of a priest (“Newt Gingrich,” 2012z). A little later, an anonymous user turned two phrases into links to Wikipedia articles that did not exist (“Newt Gingrich,” 2012aa). This change, which had the practical effect of turning the phrases red and causing them to link to pages explaining that there were no articles that shared their names with those phrases, lasted for 28 minutes before being removed by a user (“Newt Gingrich,” 2012ab). At 2:43 a.m., an anonymous user pasted some biographical information that apparently was from A&E Television Networks into the end of the article (“Newt Gingrich,” 2012ac). The next edit occurred at 3:34 a.m., when two letters were removed from the name of the previously-mentioned priest, and some absurd text was added in which Gingrich was described as “mentally retarded” and as having “bad hair,” ending with, “He likes to eat ice cream and really enjoys a nice pair of slacks” (“Newt Gingrich,” 2012ad). This was caught by the vandalism-seeking bot in less than a minute (“Newt Gingrich,” 2012ae). Four
minutes later, an editor removed the information that had been posted at 2:43 a.m. ("Newt Gingrich," 2012af).

A few hours passed with no activity at Gingrich’s article, and then at 8:33 a.m., some vandalism occurred with one instance of “Newt” being replaced with “Newet” and the term “party whips” being replaced with “fat fukcs [sic],” though the latter was not visible on the article since the change was made to the hidden instructions for a link to another Wikipedia article ("Newt Gingrich," 2012ag). The bot identified and removed this vandalism one minute later ("Newt Gingrich," 2012ah). At 12:20 p.m., an anonymous user made a few changes. Most were minor, but one of the edits identified Gingrich’s adoptive stepfather, Robert Gingrich, as his mother’s stepbrother ("Newt Gingrich," 2012ai). This was not immediately removed, but it does not appear to be true, as I was unable to find any verification for that information. An hour later, a user made a few changes, mostly to the article’s punctuation ("Newt Gingrich," 2012aj). About two and a half hours later, another user made further refinements to the punctuation. He or she returned about an hour later, making more punctuation changes at 4:42 p.m. and 4:45 p.m. ("Newt Gingrich," 2012ak; "Newt Gingrich," 2012al). These were the last edits to Gingrich’s article on March 7.

Ron Paul’s Article

The Wikipedia article for Ron Paul existed in 40 unique versions between February 21 and March 7. The first edit of that time period happened at 1:45 a.m. on February 21, when a user made a spelling correction ("Ron Paul," 2012a). About an hour later, an editor made some significant changes to the section on the controversies surrounding the newsletters that Paul published for many years, including the attribution of a quotation to a campaign spokesman.
rather than the candidate himself, as the article has previously indicated (“Ron Paul,” 2012b; “Ron Paul,” 2012c). However, less than three hours later, another user changed that particular part of the article back to saying that Paul himself was the source of the quotation (“Ron Paul,” 2012d). At 9:10 p.m. on February 21, someone performed a small amount of vandalism on the page, replacing the word “date” with “poop” (“Ron Paul,” 2012e). It was not caught by the automated system; however, the same person removed it two minutes later (“Ron Paul,” 2012f).

No changes were made to Ron Paul’s article for more than a day and a half. At 3:47 p.m. on February 23, a bot fixed the link between one of the superscript numerals within the article and the corresponding reference at the end of the article (“Ron Paul,” 2012g). A few hours later, at 7:42 p.m., someone added the degrees that Paul had received after the names of his alma matres (“Ron Paul,” 2012h). At 12:32 a.m. the following day, a user converted many of the proper names in the article, including Martin Luther King, Jr., Ronald Reagan, and the Americans with Disabilities Act, into links to the corresponding Wikipedia articles (“Ron Paul,” 2012i).

Another relatively long period of no activity ensued; this one lasted well over two days. At 9:07 a.m. on February 26, the user Arbero began making a series of edits that lasted until 9:30 AM. These included a spelling change (from the British “gynaecology” to the American “gynecology”), the removal of spaces, and the revisions of some references, among other minor changes (“Ron Paul,” 2012j; “Ron Paul,” 2012k; “Ron Paul,” 2012l; “Ron Paul,” 2012m; “Ron Paul,” 2012n; “Ron Paul,” 2012o). Beginning at 11:43 p.m. that day, someone made several edits over the course of six minutes. He or she added information on Paul’s medical residency, changed “gynecology” back to the British spelling, and then switched it right back to the American spelling under the reasoning that Paul is an American (“Ron Paul,” 2012p; “Ron
Paul,” 2012q; “Ron Paul,” 2012r). A few minutes later, at 12:36 a.m. on February 27, Arbero returned and made yet another refinement to the spelling of “gynecology” by keeping the American spelling in the article itself but causing the phrase “obstetrics and gynecology” to link directly to the Wikipedia article on that subject, which uses the British spelling in its title (“Ron Paul,” 2012s). However, a few hours later, another user reversed the previous edit because the link would redirect people to the correct page automatically, regardless of the difference between the American and British spellings (“Ron Paul,” 2012t).

At 12:20 p.m. on February 27, the user Dezastru, who had made a single edit on February 21, began an extensive series of revisions that lasted until 2:36 p.m. without any interruptions by other editors. Most of these changes were significant, including the rewording of large sections of text, the addition of links to other Wikipedia articles, the removal of some information on Paul’s 2008 presidential campaign since a separate article has detailed information on that campaign, and revisions to some of the article’s references (“Ron Paul,” 2012u; “Ron Paul,” 2012v; “Ron Paul,” 2012w; “Ron Paul,” 2012x; “Ron Paul,” 2012y; “Ron Paul,” 2012z; “Ron Paul,” 2012aa; “Ron Paul,” 2012ab; “Ron Paul,” 2012ac; “Ron Paul,” 2012ad; “Ron Paul,” 2012ae; “Ron Paul,” 2012af; “Ron Paul,” 2012ag; “Ron Paul,” 2012ah). The next edit came at 2:19 a.m. on February 28, when someone made a minor stylistic change (“Ron Paul,” 2012ai). At 12:31 p.m. on February 29, a user rearranged some of the boxes filled with subject-related links that appear at the end of many Wikipedia articles (“Ron Paul,” 2012aj). On March 1, someone made two corrections regarding some of the years during which Paul entered and left Congress (he has served in Congress at three separate times) (“Ron Paul,” 2012ak; “Ron Paul,” 2012al). The final edit covered by this study occurred at 7:27 p.m. on March 2, when someone correctly
replaced a comma with a period ("Ron Paul," 2012am). No activity at all occurred on or just prior to Super Tuesday.

Mitt Romney’s Article

The Wikipedia article for Mitt Romney, the eventual nominee of the Republican Party for the 2012 presidential election, existed in 59 different incarnations between February 21 and March 7. The first edit of February 21 occurred at 7:12 p.m., when a user made some minor stylistic changes ("Mitt Romney," 2012a). The next change, about an hour and a half later, involved the addition of information to the section about Romney’s leadership of the 2002 Winter Olympics in Salt Lake City ("Mitt Romney," 2012b). About three hours later, the user Eustress expanded the caption for the logo of Bain Capital, the private equity investment firm of which Romney was a cofounder ("Mitt Romney," 2012c). The same user made another change about 30 minutes later, removing a generic photo of the Brigham Young University campus and adding a photo of Romney’s father, George Romney, with President Richard Nixon ("Mitt Romney," 2012d). A little over two hours later, a different editor made some further revisions to the Winter Olympics section; after 55 minutes, the same person made some stylistic changes elsewhere in the article ("Mitt Romney," 2012e; "Mitt Romney," 2012f).

Romney’s article was stable for almost one day before the next edit was made at 12:39 a.m. on February 23. Eustress returned and made two edits, performing some stylistic changes and the removal of a double period ("Mitt Romney," 2012g; "Mitt Romney," 2012h). The next edit occurred at 6:44 a.m. on February 24, more than 29 hours later, when someone added information about Romney’s statement that he was “severely conservative” that included an unreferenced assertion that Romney’s statement “was unconvincing because conservatives do
not normally refer to their beliefs as severe” (“Mitt Romney,” 2012i). Three minutes later, Eustress reversed this edit under the reasoning that it was “unencyclopedic and unsubstantiated” (“Mitt Romney,” 2012j). Later on February 24, someone added a citation and made a revision to another one (“Mitt Romney,” 2012k; “Mitt Romney,” 2012l). A few minutes after that, a different user added a piece of information about a speech that Romney had just delivered in Michigan, using language that could be interpreted as being supportive of his campaign (“Mitt Romney,” 2012m). Less than three hours later, this information was removed by a user who perceived it as something a publicist might insert (“Mitt Romney,” 2012n). More than 43 hours passed before the next revision was performed. At 10:06 p.m. on February 26, someone made a small change to the article’s information on Romney’s ancestry (“Mitt Romney,” 2012o).

About an hour and a half after the previous edit, a single user, Kgrad, began a series of 15 edits spread over more than 42 hours without any intervening edits by others. Most of these changes involved word usage, grammar, and punctuation. At one point, the user began reversing some of the edits that he or she had previously made in which non-breaking spaces, which prevent a line break from occurring where they are inserted and which are often used between a numeral and the noun that it modifies, had been removed (“Mitt Romney,” 2012p; “Mitt Romney,” 2012q; “Mitt Romney,” 2012r; “Mitt Romney,” 2012s; “Mitt Romney,” 2012t; “Mitt Romney,” 2012u; “Mitt Romney,” 2012v; “Mitt Romney,” 2012w; “Mitt Romney,” 2012x; “Mitt Romney,” 2012y; “Mitt Romney,” 2012z; “Mitt Romney,” 2012aa; “Mitt Romney,” 2012ab; “Mitt Romney,” 2012ac; “Mitt Romney,” 2012ad). At 11:13 p.m. on February 28, about five hours after the long series of edits had ended, Eustress caused the article to revert back to the way it was at 10:06 p.m. on February 26, just before any of Kgrad’s changes had occurred (“Mitt Romney,” 2012ae). Two minutes later, the same editor made a change to the tense of two verbs

At 2:34 a.m. on February 29, the Wikipedia user MaxxFordham inserted quotation marks around the word “Mormon,” which appeared in parentheses immediately after the official name of Romney’s church, “The Church of Jesus Christ of Latter-day Saints.” However, the user did not insert them correctly, which caused the word not to function as a link to the Wikipedia article on Mormons (“Mitt Romney,” 2012al). Four minutes later, an editor removed the quotation marks, commenting that there was “no need for air/scare quotes even if they were placed correctly” (“Mitt Romney,” 2012am). MaxxFordham reinserted them five minutes after their removal, claiming that they were not “‘air-’ or ‘scare-’ quotes” and arguing that they were appropriate since “Mormon” is a nickname, not the official name, of the church (“Mitt Romney,” 2012an). However, the editor still did not insert them correctly, and it took him or her two more attempts to do it properly (“Mitt Romney,” 2012ao; “Mitt Romney,” 2012ap). Twelve minutes later, the quotation marks were again removed, this time by the user Eustress (“Mitt Romney,” 2012aq). The proponent of their use added them back six minutes later (“Mitt Romney,” 2012ar). They remained for more than an hour until yet another editor—the third different one—removed them (“Mitt Romney,” 2012as). A few minutes later, this editor added some limited information about February’s primaries and caucuses (“Mitt Romney,” 2012at). MaxxFordham, who seemed quite adamant about his or her desire to have quotation marks around the word “Mormon,” added them back to the article at 5:36 a.m., more than one hour after their most recent removal and
more than three hours after their original insertion into the article (“Mitt Romney,” 2012au). No other edits were made to the article for more than nine hours, and then at 3:02 p.m., someone added a comma to the article (“Mitt Romney,” 2012av). Eleven minutes later, someone removed the quotation marks around “Mormon” yet again, becoming the fourth different person to do so (“Mitt Romney,” 2012aw). They did not return during the period of analysis for this paper.

No edits occurred on March 1. At 1:26 a.m. on March 2, an editor made a revision to reflect Romney’s recent victory in the Wyoming caucuses (“Mitt Romney,” 2012ax). The next edit came over 14 hours later, when someone removed a few hyphens (“Mitt Romney,” 2012ay). Following that, no editing occurred for more than 46 hours. At 2:31 p.m. on March 4, someone made some minor changes to the article’s links to another Wikipedia article so that readers would not be directed through a redirect page (“Mitt Romney,” 2012az). After that revision, nothing happened for more than 54 hours. At 8:39 p.m. on March 6, someone added a box containing a limited family tree showing Romney’s place in the family of the Mormon pioneers Parley Pratt and Orson Pratt (“Mitt Romney,” 2012ba). The first edit of March 7 involved changes to the formatting of some of the references for the article, as well as revisions to a few of the links to other Wikipedia pages (“Mitt Romney,” 2012bb). About an hour and a half later, at 6:34 a.m., someone changed Romney’s description near the beginning of the article as “a candidate for the 2012 Republican Party presidential nomination” to “the leading candidate for the 2012 Republican Party presidential nomination” (“Mitt Romney,” 2012bc). Almost five hours later, at 11:31 a.m., a user added a sentence summarizing the results of the Super Tuesday primaries and caucuses (“Mitt Romney,” 2012bd). At 12:52 p.m., someone removed the Pratt family box, but that edit was reversed almost five hours later, at 5:43 p.m. (“Mitt Romney,” 2012be; “Mitt Romney,” 2012bf). That was the last edit of March 7.
Rick Santorum’s Article

Rick Santorum’s Wikipedia article had, by far, the most editing activity during the period of time studied for this paper. His article existed in 122 different versions during the 16-day period. The first edit of the period from February 21 to March 7 occurred at 12:32 a.m. on February 21. The editor reversed an edit that had occurred about an hour and a half earlier, in which someone had removed the word “mainstream” from the statement, “Santorum rejects the mainstream scientific opinion on climate change . . .” (“Rick Santorum,” 2012a; “Rick Santorum,” 2012b). More than 16 hours passed before the next revision occurred; that change involved the removal of the words “the late” before the name of Senator John Heinz under the reasoning that he was not a recently-deceased individual (“Rick Santorum,” 2012c). Seven minutes later, the same editor moved a period from the inside of a pair of quotation marks to the outside (“Rick Santorum,” 2012d). The individual did the same thing with a comma 37 minutes later and also accidentally damaged one of the article’s references as part of the same edit (“Rick Santorum,” 2012e). He or she fixed the error three minutes later (“Rick Santorum,” 2012f). Less than half an hour later, someone added the word “Virginia” after “Great Falls,” the location of a home that Santorum had purchased, in order to clarify which Great Falls was his home (“Rick Santorum,” 2012g).

Between 7:22 p.m. and 7:59 p.m. on February 21, a single user made 18 edits to Santorum’s article without any intervening revisions by other editors being made. The first changes were the replacement of a photo with a different one and a minor change in word choice (“Rick Santorum,” 2012h; “Rick Santorum,” 2012i). Next came the addition of a statement about the candidate rising to the top of opinion polls after winning several primaries and caucuses (“Rick Santorum,” 2012j). This was followed by a very minor change, the removal of a space,
and then a more substantial one, the addition of information about Santorum’s ranking by the National Taxpayers Union (“Rick Santorum,” 2012k; “Rick Santorum,” 2012l). Next the editor removed some information about a political action committee and a company being fined for giving Santorum corporate money, explaining the change by saying that the information was more appropriate for an article about the campaign than for Santorum’s personal article (“Rick Santorum,” 2012m).

The next revision involved the addition of information to the section about Santorum’s endorsement of Arlen Specter in 2004 (“Rick Santorum,” 2012n). The change that came next featured the addition of some clarifying information on the speculation about a possible 2008 presidential campaign that occurred during his ultimately unsuccessful senatorial campaign in 2006 (“Rick Santorum,” 2012o). This was followed by the addition of information to the section of the article that described his support for Mitt Romney during the 2008 presidential campaign (“Rick Santorum,” 2012p). With the next edit, a word was added to a statement about Santorum having “a mixed record on fiscal issues,” changing it to “a more mixed record on fiscal issues” (in contrast to his record on social issues) (“Rick Santorum,” 2012q). The next two revisions involved the addition of information and the changing of some wording about his specific political positions (“Rick Santorum,” 2012r; “Rick Santorum,” 2012s). For the next version of the page, a more specific statement about Santorum’s father being an immigrant from Italy was added to the existing vague information about his family’s history as immigrants (“Rick Santorum,” 2012t). The following two edits involved relatively minor wording changes (“Rick Santorum,” 2012u; “Rick Santorum,” 2012v). Then the editor made some changes to the section on Santorum’s net worth by making the information less specific, replacing a source with one that was claimed to be better (“Rick Santorum,” 2012w). At 7:59 p.m., the user added that
Santorum came “from relatively modest means” (“Rick Santorum,” 2012x). The last of the user’s 18 edits occurred when he or she undid the previous edit less than one minute later (“Rick Santorum,” 2012y).

Just four minutes after the last edit, a different user appeared and removed a “bland statement” about Santorum advancing “issues and causes important to his state” (“Rick Santorum,” 2012z). A few hours later, someone significantly rewrote much of the section of the article concerning the Santorum Amendment to the No Child Left Behind Act, which promoted the teaching of alternatives to the theory of evolution (“Rick Santorum,” 2012aa). Eleven minutes later, those changes were reversed by an editor who mentioned that the amendment was not enacted into law, as the previous edit seemed to suggest (“Rick Santorum,” 2012ab). At 3:20 a.m. on February 22, a user made two edits within the same minute. The first one added an “Abortion” section with information about Santorum’s pro-choice views in an earlier period of his life, and the latter edit modified the appearance of the heading of the “Abortion” section (“Rick Santorum,” 2012ac; “Rick Santorum,” 2012ad). After ten minutes, someone reversed those changes, indicating that the material added was not enough to justify a new “Abortion” section (“Rick Santorum,” 2012ae). At 4:51 a.m., someone added a reference (“Rick Santorum,” 2012af). A few minutes later, a different user made two edits. He or she removed the recently-added reference and added information about Santorum’s previous pro-choice views; however, this information was not placed in a new section, as the editor from less than two hours earlier had done (“Rick Santorum,” 2012ag; “Rick Santorum,” 2012ah).

Santorum’s page remained unchanged for over nine hours. At 2:32 p.m. on February 22, someone made some style improvements and also corrected an error regarding the year of his election to Congress (“Rick Santorum,” 2012ai). Twenty-three minutes later, the same user
removed an unnecessary word (“Rick Santorum,” 2012aj). About six hours and 45 minutes after that, a user added a few words and changed an indented quotation that was not very long into a quotation that was integrated into a paragraph ("Rick Santorum,” 2012ak). The same user made five additional edits over the next 11 minutes. With the first of these, the editor corrected a mistake that he or she had made with the coding of the prior edit (“Rick Santorum,” 2012al). The next two edits involved some minor rewording of a section of text and the conversion of a phrase into a link to another Wikipedia article (“Rick Santorum,” 2012am; “Rick Santorum,” 2012an). This was followed by some more minor rewording and verb tense changes (“Rick Santorum,” 2012ao). The user’s final edit was made at 9:53 p.m., when he or she performed more rewording and a verb tense change and also removed an in-text link to another Wikipedia page because it appeared inside of a quotation ("Rick Santorum,” 2012ap).

The article was stable for more than 21 hours. The next revisions occurred at 7:01 p.m. and 7:08 p.m. on February 23, when an editor made some stylistic changes and inserted a phrase about Santorum’s use of earmarks (“Rick Santorum,” 2012aq; “Rick Santorum,” 2012ar). At 2:21 a.m. on February 24, the first instance of vandalism during the time period of this study occurred; someone added the sentence, “He has made several remarks about how much he enjoys anal sex” (“Rick Santorum,” 2012as). This text was removed by a Wikipedia user two minutes later (“Rick Santorum,” 2012at).

At 4:44 a.m. on February 24, someone added back most of the information on Santorum’s net worth that had been removed more than two days earlier (“Rick Santorum, 2012au). Almost two hours later, a user added the phrase “in a landslide” to the description of his loss in the 2006 senatorial election (“Rick Santorum,” 2012av). That text was removed by
another editor four minutes later (“Rick Santorum,” 2012aw). The next edit was a behind-the-scenes change to one of the page’s templates (“Rick Santorum,” 2012ax).

At 8:11 p.m., the user StraightTalkCitizen added a “Higher Education” section and filled it with text about Santorum’s belief that President Barack Obama wanted to send young adults to college in order to have them indoctrinated with liberal and secular viewpoints. According to the included references, Santorum had recently spoken about this belief in an interview with Glenn Beck (“Rick Santorum,” 2012ay). Nineteen minutes later, the user Collect removed a line about Santorum’s 2006 loss having the largest margin ever for an incumbent Republican because there was no apparent source for the information (“Rick Santorum,” 2012az). The same user made another change four minutes later, editing down the information on Santorum’s beliefs about college indoctrination to what he or she considered to be a more appropriate amount for a Wikipedia article (“Rick Santorum,” 2012ba). Forty-one minutes later, StraightTalkCitizen put some of the deleted material back into the article (“Rick Santorum,” 2012bb). Some of that text was removed eight minutes later by Collect. The editor kept a reference added by StraightTalkCitizen but removed a statement that, according to Collect, was not supported by any references (“Rick Santorum,” 2012bc). StraightTalkCitizen undid Collect’s revision nine minutes later, claiming that the information was available at the cited location (“Rick Santorum,” 2012bd). StraightTalkCitizen’s action was undone 27 minutes later by a third party, returning the article to Collect’s last version (“Rick Santorum,” 2012be). Only four minutes later, StraightTalkCitizen reversed that edit (“Rick Santorum,” 2012bf). A new participant in this series of actions made yet another reversal a little over an hour later, and this time StraightTalkCitizen did not reappear with another edit (“Rick Santorum,” 2012bg).
More than a day passed without any changes to Santorum’s article. At 5:53 a.m. on February 26, someone replaced an instance of “who” with “whom” (“Rick Santorum,” 2012bh). A few minutes later, the same person changed the name of the “Libertarianism” section to “Opposition to libertarianism” to make the subject’s stance more obvious to someone quickly scanning the article (“Rick Santorum,” 2012bi). About half an hour later, the user Coffeepusher, who had made some edits a few days earlier, completely removed the “Higher Education” section that had been added by StraightTalkCitizen on February 24, seeing it as just an interview excerpt (“Rick Santorum,” 2012bj). With the next edit, someone changed the wording of a link to another Wikipedia page so that the link would not connect to a redirect page (“Rick Santorum,” 2012bk). At 9:23 p.m., a user undid Coffeepusher’s removal of the “Higher Education” section, and a minute later, the same person changed Glenn Beck’s name from italic type to normal type, presumably because his name was not being used as the title of a show (“Rick Santorum,” 2012bl; “Rick Santorum,” 2012bm). At 8:44 p.m., StraightTalkCitizen returned to the page and added a “Separation of Church and State” section that was very similar to the “Higher Education” section, consisting primarily of a quotation by Santorum taken from a recent media interview (“Rick Santorum,” 2012bn).

At 12:38 a.m. on February 27, a user made a spelling correction (“Rick Santorum,” 2012bo). At 6:44 a.m., someone removed a redundant link to a related Wikipedia page (“Rick Santorum,” 2012bp). Several hours later, an editor removed an ungrammatical extra word (“Rick Santorum,” 2012bq). At 12:54 p.m., the editor who had made a spelling correction more than 12 hours earlier returned and made two more. All three corrections involved changing “Octoer” to “October” (“Rick Santorum,” 2012bo; “Rick Santorum,” 2012br). A little over four hours later, someone added some information about the time Santorum spent as a child in West Virginia and
made a few other minor changes (“Rick Santorum,” 2012bs). The next edit occurred just under four hours later when someone removed some unnecessary capitalization (“Rick Santorum,” 2012bt). At 11:44 p.m. on February 27, someone added some information and references to clarify that the candidate had disavowed some of his votes in support of education and transportation programs (“Rick Santorum,” 2012bu). Thirty-six minutes later, the same user made some modifications to the way that dates were written in some references (“Rick Santorum,” 2012bv).

The next edit took place more than nine hours later, at 9:39 a.m. on February 28. A user replaced the phrase “emphasized fiscal restraint” with the more specific “proposed spending and tax cuts” (“Rick Santorum,” 2012bw). Just over two hours later, someone added a reference (“Rick Santorum,” 2012bx). A few minutes later, an editor fixed two links to other Wikipedia articles so that they would link directly to the intended articles rather than disambiguation pages, which are Wikipedia pages that list the multiple things to which a single term might refer (“Rick Santorum,” 2012by). As one of the examples in this case, “ABC” was meant to refer to the American Broadcasting Company but could also refer to the Australian Broadcasting Corporation, a Jackson 5 song, and numerous other entities (“ABC,” 2012).

At 4:40 a.m. on February 29, someone changed the phrasing of a sentence referring to the Santorums’ children to clarify the number of children that were born to them and the number that were still living, since one had died shortly after birth (“Rick Santorum,” 2012bz). Someone made a change to the tense of a verb 24 minutes later (“Rick Santorum,” 2012ca). About three hours later, someone made another change related to the Santorums’ deceased son, Gabriel, replacing the word “corpse” with “body” in the passage that described Santorum and his wife Karen bringing their deceased son home for their other children to see, an occurrence that
prompted some scrutiny during the campaign (“Rick Santorum,” 2012cb). Twenty-five minutes later, someone made further revisions to the sections dealing with Santorum’s family life (“Rick Santorum,” 2012cc). With the next edit, which occurred over an hour and 45 minutes later, someone replaced two instances of the term “AIDS” with “HIV/AIDS” (“Rick Santorum,” 2012cd). After a nine-and-a-half-hour break in editing, the next revision, by the user Badmachine, involved a further change to the words describing Santorum’s deceased infant son (“Rick Santorum,” 2012ce). Eighteen minutes later, the same editor introduced the information that the Santorums slept overnight with their son’s body and included a reference for the new material (“Rick Santorum,” 2012cf).

At 9:44 p.m. on February 29, the editor StraightTalkCitizen reappeared and added some information about a statement that Santorum made following his losses in the Arizona and Michigan primary elections the day before. Rather than being about those races, the statement in question was one in which Santorum referred to the “men and women” who signed the Declaration of Independence despite the fact that all of the signers were men (“Rick Santorum,” 2012cg). Less than half an hour later, the editor Arzel, who previously had been involved with modifying StraightTalkCitizen’s edits, undid that revision because of its lack of relative importance and apparent sympathy to a particular a point of view (“Rick Santorum,” 2012ch). The same editor performed more changes 10 minutes later, making further revisions to the description of the situation surrounding the death of Santorum’s son, referring to the removed parts as “redundant sensationalistic verbage” (“Rick Santorum,” 2012ci). These changes were reversed 20 minutes later by someone who thought that the change made the language “misleading” (“Rick Santorum,” 2012cj). Yet another user made an edit to this section 21 minutes later, adding the point in Karen Santorum’s pregnancy at which she had given birth, a
detail that had previously been described with just the words “born prematurely” (“Rick Santorum,” 2012ck). At 11:40 p.m., StraightTalkCitizen brought back the text that he or she had added earlier in the evening and that had subsequently been removed, arguing that it did not represent a point of view since it was a direct quotation of the candidate (“Rick Santorum,” 2012cl). After just four minutes, this revision was again reversed by a previously uninvolved editor, arguing that the information showed “no evidence of notability” and recommending that the issue be discussed on the article’s Talk page (“Rick Santorum,” 2012cm).

At 1:03 a.m. on March 1, Arzel again made some of the changes that he or she had previously made and that were removed for being “misleading.” These changes were in regards to the description of the death of Santorum’s son; Arzel preferred the use of “him” to “the body of the dead infant” and also did not think that it was necessary to refer the son’s burial (“Rick Santorum,” 2012cn). Badmachine reversed those changes three minutes later, referring to the discussion at the Talk page and making the point that the term “burial” was useful since it signified that there was a burial rather than a cremation (“Rick Santorum,” 2012co). Ten minutes later, Arzel reversed Badmachine’s action, expressing his or her view that Badmachine was using a “sensationalistic approach” (“Rick Santorum,” 2012cp). No more edits occurred for 21 minutes, and then Badmachine replaced the word “him” with “the corpse,” saying that Arzel’s preferred terminology consisted of “weasel words” (“Rick Santorum,” 2012cq). A new participant in this series of edits, Dominus Vobisdu, reversed Badmachine’s change at 1:54 a.m. because there was “no consensus” for it (“Rick Santorum,” 2012cr). Four minutes later, Badmachine replaced “him” with “the body” and left a comment consisting of the word “grody,” seemingly in reference to the use of “him” to describe the body of Santorum’s son (“Rick Santorum,” 2012cs). Within a minute, Badmachine noticed another instance of the word “him”
that had previously been left alone and changed it to “it,” leaving the comment “shudder” (“Rick Santorum,” 2012ct). A little more than three hours elapsed, and at 5:07 a.m., Arzel changed “the body” and “it” back to “him” and “him” and left the emotional comment, “‘it’! This was a living human being, not a piece of trash. Why don’t you go be insensitive somewhere else” (“Rick Santorum,” 2012cu). Five minutes later, a different user made the same change to another appearance of the word “it” used in reference to the deceased son (“Rick Santorum,” 2012cv).

More than eight hours of no activity on Santorum’s page passed. At 1:37 p.m. on March 1, someone corrected a broken link to another Wikipedia article (“Rick Santorum,” 2012cw). More than nine hours later, the hotly debated section on the death of Santorum’s son became active again. The user Tvoz replaced the first instance of “him” with “the dead infant,” leaving the other two uses of “him” intact, and also reintroduced a reference to the burial (“Rick Santorum,” 2012cx). Two minutes later, the same person switched the order in which two of the article’s references appeared (“Rick Santorum,” 2012cy). The next edit occurred at 5:09 a.m. on March 2, when someone added Santorum to the Wikipedia category “American people of Irish descent” (“Rick Santorum,” 2012cz).

Another idle period of more than nine hours ensued. At 2:50 p.m. on March 2, Arzel made a substantial change to the information, not just the wording, in the article about the death of the Santorums’ son. The new information was that Rick and Karen Santorum had spent the night in the hospital with their son’s body after his death and then brought the body home the next day, contrasting significantly with the previous description of the event, in which the deceased son’s body was at the family’s home overnight (“Rick Santorum,” 2012da). Almost four hours later, an editor who was new to the discussion made several changes to the language, replacing the three debated uses of “him” with “the dead baby,” “the corpse,” and “it,”
respectively, arguing that “it’s so unbelievable, it needs to be made painfully clear what they did.” The editor also argued that using “him” was more representative of Santorum’s point of view than a neutral point of view (“Rick Santorum,” 2012db). Twelve minutes later, Dominus Vobisdu changed “dead baby” and “corpse” to “deceased infant” and “body,” respectively, saying that “corpse” was against the consensus of the Talk page (“Rick Santorum,” 2012dc). The same user made another revision to the same passage 42 minutes later, removing some redundant language (“Rick Santorum,” 2012dd). Tvoz made an edit 21 minutes later, adding the more specific information that Rick and Karen Santorum had spent the night in the hospital with their son’s body “between them” (“Rick Santorum,” 2012de). Eight minutes later, at 8:00 p.m., Arzel changed the remaining instance of “it” to “him,” again leaving a comment about the body not being a “piece of trash” (“Rick Santorum,” 2012df). Just three minutes later, Dominus Vobisdu reversed the change and addressed the editor directly with a comment: “Azrel [sic], please. Nobody said it was a piece of trash, and the wording does not suggest it” (“Rick Santorum,” 2012dg). This was the last edit of March 2 and the last edit of the time period that I studied that involved the death of Santorum’s son.

More than 27 hours passed without any revisions to Santorum’s article. At 11:42 p.m. on March 3, someone fixed two typographical errors by adding a preposition and a conjunction where they needed to be (“Rick Santorum,” 2012dh). The next edit, more than 16 hours later, consisted of someone removing the term “Mr.” from the one place in the article where the candidate was referred to as “Mr. Santorum” (“Rick Santorum,” 2012di). Almost five hours later, at 9:16 p.m. on March 4, a user made a slight modification to the article’s metadata, causing no visible changes to the article (“Rick Santorum,” 2012dj).
At 12:47 a.m. on March 5, an editor changed the title of the “Same-sex marriage and reproductive rights” section to “Same-sex marriage and contraception” (“Rick Santorum,” 2012dk). Thirteen minutes later, that revision was undone by someone pointing out that the section also covered abortion, so the more general term “reproductive rights” was preferable (“Rick Santorum,” 2012dl). The next edit did not occur for almost two full days. At 12:24 a.m. on March 7, someone added more specific information to the passage describing gay rights activist Dan Savage’s campaign for people to suggest and vote on a sex-related definition for the word “santorum.” Previously, the article had included the statement, “The outcome was a description pertaining to anal sex”; it was changed to the more explicit, “The outcome was a definition reading ‘the frothy mixture of lube and fecal matter that is sometimes the byproduct of anal sex’” (“Rick Santorum,” 2012dm). The same user made a minor punctuation correction three minutes later (“Rick Santorum,” 2012dn). Between 12:50 a.m. and 12:56 a.m., an editor made extensive changes, grouped into three page revisions, to the formatting and punctuation of a large portion of the article, mostly affecting the page’s references (“Rick Santorum,” 2012do; “Rick Santorum,” 2012dp; “Rick Santorum,” 2012dq). At 5:17 a.m. on March 7, someone corrected a double-word error in which Santorum had been described as having a “law degree degree” (“Rick Santorum,” 2012dr). This was the last edit of March 7.

Analysis

One of the main issues that I wanted to explore was that of vandalism of the Wikipedia articles of well-known, controversial people, particularly politicians. Considering the heated rhetoric that was a prominent feature of the campaign for the 2012 Republican presidential nomination, I expected there to be more vandalism than there actually was. Newt Gingrich’s
article was the only one that had a significant amount. For his article, at least 23.1 percent of the edits that occurred during the time period under study involved vandalism. A few changes were not obvious instances of vandalism but might have been vandalism nonetheless. For example, someone inserted text saying that Gingrich’s stepfather was his mother’s stepbrother, and I could not find any sources that verified that. Factoring in the edits that were made in order to remove the vandalism, almost half of the editing activity at Gingrich’s page was indisputably related to vandalism. I expected to find a similar amount at the articles of the other three candidates, especially Rick Santorum, who has been widely criticized and ridiculed for years by many people who do not agree with his extremely conservative views on many social issues. However, only one instance of vandalism to his article occurred despite the fact that his article had more than twice as many edits as Mitt Romney’s and three times as many edits as Newt Gingrich’s and Ron Paul’s. Paul’s article saw only one occurrence of vandalism, and Romney’s page did not have any during the 16 days under review. The data related to vandalism that I obtained is compiled in Table 1.

I calculated the average amount of time that it took for each instance of vandalism to be removed. Since Ron Paul’s article and Rick Santorum’s article each had only one appearance of vandalism, the figure was just the amount of time that it took for that one instance to be removed. In each case, it took two minutes, and the removal was done by an actual person rather than one of the automated bots that is programmed to detect vandalism. For the nine occurrences of vandalism at Newt Gingrich’s page, the average amount of time for removal was 2.89 minutes. The average amount of time would have been much shorter—1.38 minutes—except for one instance of vandalism that took 15 minutes for a user to remove. In this particular situation, the vandal had reinserted a line of text that he or she had added to the article and that had been
removed quickly by one of the bots. This suggests a problem with the bot system. At least in this case, the bot did not remove the same phrase the second time that it was added. Perhaps the bots have been programmed not to do so under the reasoning that the quick reappearance of removed material might suggest that it had been mistakenly identified as vandalism.

Table 1: Occurrences of Vandalism

<table>
<thead>
<tr>
<th></th>
<th>Newt Gingrich</th>
<th>Ron Paul</th>
<th>Mitt Romney</th>
<th>Rick Santorum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of instances of vandalism</td>
<td>9</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Percentage of page revisions that were vandalism</td>
<td>23.1%</td>
<td>2.6%</td>
<td>0.0%</td>
<td>0.8%</td>
</tr>
<tr>
<td>Average amount of time before removal</td>
<td>2.89 minutes</td>
<td>2.00 minutes</td>
<td>Not applicable</td>
<td>2.00 minutes</td>
</tr>
</tbody>
</table>

Table 2 presents the breakdown of edits according to type. When multiple edits occurred in a single page revision, I counted each type of edit once. For example, if a revision included 12 punctuation corrections, three changes to the article’s references, and the removal of a sentence, then one punctuation correction, one reference change, and one information removal are reflected in the table. This system is undoubtedly imperfect, but it would have been unreasonable within the scope of this study to tabulate each individual edit.

Of all the articles, the category that provided the highest percentage of the changes that were made to any individual article was the changes in grammar, punctuation, spelling, formatting, etc. that were made to Mitt Romney’s article, which constituted 49.3 percent of the total changes. This was largely due to two series of punctuation revisions, which were included in the above discussion. The first one involved the removal and then the replacement of a large
number of non-breaking spaces. The second series was the result of a dispute between one editor who believed that the word “Mormon” should have quotation marks around it where it was included in parentheses after the listing of “The Church of Jesus Christ of Latter-day Saints” as Romney’s religion, and several other editors who did not believe that the quotation marks were appropriate. The proponent of the quotation marks placed them back into the article several times before finally giving up.

Rick Santorum’s article featured more than twice as many edits (as a percentage of the total) as any of the others in the category of changes in wording. This high percentage is primarily the result of the dispute in which numerous editors made competing revisions as they argued about what were the appropriate words to use to describe Santorum’s son Gabriel, who died soon after birth, and the actions of the Santorum family in the immediate aftermath. These examples from Romney’s and Santorum’s articles serve well to illustrate the point that the heaviest editing activity seems to occur when someone begins to make changes that do not meet with general agreement from the Wikipedia users who have been monitoring the page.
Table 2: Page Revisions by Type of Edits Performed

<table>
<thead>
<tr>
<th>Action</th>
<th>Number of instances in Gingrich’s article</th>
<th>Number of instances in Paul’s article</th>
<th>Number of instances in Romney’s article</th>
<th>Number of instances in Santorum’s article</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addition of information</td>
<td>5 (11.6%)</td>
<td>7 (11.7%)</td>
<td>12 (16.4%)</td>
<td>39 (22.0%)</td>
</tr>
<tr>
<td>Removal of information</td>
<td>4 (9.3%)</td>
<td>9 (15.0%)</td>
<td>8 (11.0%)</td>
<td>24 (13.6%)</td>
</tr>
<tr>
<td>Corrections and clarifications</td>
<td>1 (2.3%)</td>
<td>5 (8.3%)</td>
<td>1 (1.4%)</td>
<td>11 (6.2%)</td>
</tr>
<tr>
<td>Changes in wording, order of words, and order of sections</td>
<td>4 (9.3%)</td>
<td>4 (6.7%)</td>
<td>5 (6.8%)</td>
<td>34 (19.2%)</td>
</tr>
<tr>
<td>Changes in grammar, punctuation, spelling, formatting, etc.</td>
<td>6 (14.0%)</td>
<td>10 (16.7%)</td>
<td>36 (49.3%)</td>
<td>21 (11.9%)</td>
</tr>
<tr>
<td>Changes to internal wikilinks</td>
<td>2 (4.7%)</td>
<td>6 (10.0%)</td>
<td>2 (2.7%)</td>
<td>8 (4.5%)</td>
</tr>
<tr>
<td>Addition of, removal of, or changes to references</td>
<td>2 (4.7%)</td>
<td>17 (28.3%)</td>
<td>9 (12.3%)</td>
<td>31 (17.5%)</td>
</tr>
<tr>
<td>Vandalism</td>
<td>9 (20.9%)</td>
<td>1 (1.7%)</td>
<td>0 (0.0%)</td>
<td>1 (0.6%)</td>
</tr>
<tr>
<td>Removal of vandalism</td>
<td>9 (20.9%)</td>
<td>1 (1.7%)</td>
<td>0 (0.0%)</td>
<td>1 (0.6%)</td>
</tr>
<tr>
<td>Other</td>
<td>1 (2.3%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
<td>7 (4.0%)</td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>60</td>
<td>73</td>
<td>177</td>
</tr>
</tbody>
</table>

Another observation that I made while conducting this study is that there were not as many edits as I expected to see. I counted the number of page revisions for each candidate’s article on every day of the study and compiled that data into Table 3. For each article, there were at least two days on which no editing occurred at all and at least one day on which there was only one edit. Newt Gingrich’s article saw no changes for 10 entire (non-consecutive) days, which is
more than the number of days on which revisions were made. I was surprised to discover that, despite the fact that these four politicians were in the news constantly during this period of time, the need to make changes to their articles was not felt by an extraordinarily high number of people.

I also found it somewhat surprising to discover that the number of revisions did not increase significantly at the times that elections were held during this period. This was due in part to the fact that each candidate had a separate Wikipedia article that was focused on the 2012 presidential primary campaign; these articles were the most appropriate venue for detailed updates about the campaign. In addition, there were articles on the overall 2012 primary process and Super Tuesday, among other topics. In a more general sense, these other articles probably were the biggest factor affecting the number of edits being made to the biographical articles.

The first election day during this period was February 28, when Arizona and Michigan held primaries. Ron Paul’s article had its busiest day on February 27, but these edits were not about recent developments in the campaign. Likewise, the two busiest days for Mitt Romney’s article were February 28 and 29, but almost all of these revisions involved grammar, punctuation, and spacing issues. Some basic information about the February primaries was added to Romney’s page with just one of the changes that occurred on those two days. Newt Gingrich’s article was the only one that experienced a large amount of editing on March 5, 6 (Super Tuesday), and 7, but the vast majority of the changes were the result of vandalism or punctuation refinements. Paul’s article did not have any edits at all between March 3 and 7.
Table 3: Page Revisions by Date

<table>
<thead>
<tr>
<th>Date</th>
<th>Number of revisions to Gingrich’s article</th>
<th>Number of revisions to Paul’s article</th>
<th>Number of revisions to Romney’s article</th>
<th>Number of revisions to Santorum’s article</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 21</td>
<td>6</td>
<td>6</td>
<td>3</td>
<td>25</td>
<td>40</td>
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<tr>
<td>February 22</td>
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<td>3</td>
<td>16</td>
<td>19</td>
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<tr>
<td>February 23</td>
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<td>2</td>
<td>2</td>
<td>2</td>
<td>6</td>
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<td>5</td>
<td>15</td>
<td>22</td>
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<tr>
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<td>9</td>
<td>5</td>
<td>7</td>
<td>21</td>
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<tr>
<td>February 27</td>
<td>0</td>
<td>16</td>
<td>3</td>
<td>7</td>
<td>26</td>
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<td>10</td>
<td>4</td>
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<td>14</td>
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<td>9</td>
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<tr>
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<td>16</td>
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<td>5</td>
<td>6</td>
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<tr>
<td>Total</td>
<td>39</td>
<td>39</td>
<td>58</td>
<td>121</td>
<td>257</td>
</tr>
</tbody>
</table>

Conclusions

Based on this study, it seems reasonable to conclude that the Wikipedia articles of well-known personalities can generally be considered accurate and bias-free, especially at times that they are in the news regularly, prompting numerous Wikipedia users to spend time looking at the articles and thereby increasing the likelihood that false or misleading information will be removed quickly. However, users of the site must always be cautious. There is always a chance that someone will access an article during the one or two minutes that vandalism usually exists before it is removed. While most instances of vandalism are obvious, the addition of misleading information often is not. The best way for someone to be confident in the contents of a Wikipedia article is to check its history to see if any significant changes have been made.
recently. With articles about subjects that do not generate as much interest as those of presidential candidates, visitors to Wikipedia should exercise even greater caution since the likelihood is higher that untrue or biased material will remain present for an extended period of time.
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