# The Art of (Data) Storytelling: Hip Hop Innovation and Bringing a Social Justice Mindset to Data Science and Visualization

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## Abstract

The extent to which data visualizations are used, and the quality of these visualizations, has consistently been shown to influence human decision-making relative to static (non-visual) presentations of findings or ideas (Boldosova & Luoto, 2019; El-Wakeel et al., 2020; Liem et al., 2020). Why are visualizations so impactful? Likely because most decision-makers do not want to sort through spreadsheets or read a novel-length narrative to understand what is important—they want it straight and quick. They want color, novelty, storytelling, and interactivity (Dykes, 2020; Kostelnick, 2016; Kosara & MacKinley, 2013). This is the purpose of data storytelling: to literally tell a story about the data analyses to, in some way, impart knowledge or affect change among the audience. Data and data analysis are never neutral—they are always political-and storytelling is how the data analyst can attempt to influence how data findings are perceived by the audience. This paper discusses the basis of data storytelling and why it is important for creating a narrative around data visualizations that compels readers and viewers to act upon findings. It then discusses (in the form of a reflective discussion) how the art of data storytelling may be improved and activated to promote social justice themes by reflecting on the effectiveness of storytelling in hip hop music.

**Keywords:** data science; data storytelling; hip hop; social justice; visualization

**Publication Type:** literature review

## What is Data Storytelling?

Data storytelling is the art of using language and communicative abilities to enhance traditional data visualizations (Echeverria et al., 2018). Simply providing visualizations like charts and tables is insufficient for most readers to adequately comprehend what information is being conveyed (Knaflic, 2015). Storytelling allows readers to connect to key findings at a deeper level by understanding where the data came from, why it is important, and what the visualizations indicate, even if the readers lack a true grasp of data literacy (the ability to interpret or understand data and data visualizations). From traditional storytelling—folklore, histories, and printed works—we know that the most compelling stories are not always about the most interesting topics (McCabe & Peterson, 1984).

Many authors point to different "typologies" of stories that can be told about or with data. Kelliher and Slaney (2012) identify four types of data stories that can be told: those that inform (e.g., make or refute claims), those that explain (revealing deeper insights from the data), those that persuade (stress the importance of the findings), and those that entertain.

Davenport (2014), Gray et al. (2012), Kang (2015), and Ojo and Heravi (2017) note different ways in which these stories can be structured: to describe change over time, to compare and/or contrast big and small level concepts/findings, to explore intersections or profile outliers, to sort into categories, and to reflect or predict. Together, these typologies reflect the basis of data storytelling.

## Data Storytelling Bridges Art and Science

While the analysis of large sets of data is certainly a science which requires specific management and statistical procedures and understandings about the nature of data, the process of sharing data findings with others is most certainly an art. It is a form of art for which actual awards are given. Ojo and Heravi (2017) examined characteristics of award-winning data storytelling in stories published between the years of 2013 and 2016. These "stories" were frequently designed to be interactive, involving many data visualizations along with narrative. There was no common technology used or structure behind the stories—there were many ways that authors achieved their desired outcome. One central commonality among these award-winning stories is what they accomplished: revealing some hidden, underlying, or conflicting information beyond what a superficial look at a chart or a news headline could communicate. The stories are journalistic in nature, as opposed to a technical report of findings.

Kelliher and Slaney (2012) note that good stories include periods of both tension/conflict and relief and good data storytelling may too. Data can present conflicts, for example: *Here is the problem, as illustrated in our analyses and solutions*, and *Here is what we can expect, if we act in this way.* As many people have experienced throughout their life, pairing illustrations and text is generally more effective for communicating a message than using either one in isolation (Dykes, 2020). They say a picture is worth 1,000 words, but a picture paired with 1,000 words is worth 2,000 words. The narrative provides context and complements the data visualization, just as with a picture book, textbook, or atlas.

## Data Storytelling Can Reveal Both Positive and Negative Subtexts in the Data

Data storytelling—in both visual and audio formats—not only benefits the storyteller in convincing the reader/listener but can also benefit that reader/listener by providing indications of hidden contexts or motives behind the data. Any fan of true crime stories knows that the more you can get a suspect to talk, the more likely they are to say something they shouldn't have said. Aguirre Jr. (2000) presents a narrative example of how storytelling can reveal systemic bias by using the lens of critical race theory to parse a conversation about a university's hiring processes. In Aguirre Jr.'s example, a university offers a Diversity Opportunity Targets "affirmative action" program that offers additional funding for exceptional minority faculty candidates. From a purely numbers-based perspective, this program can be made to seem highly beneficial for promoting campus diversity. The university can point to the number of candidates hired and the funds dedicated to the program. Only when university administrators explain the story behind how the program works does the problematic bias become clear.

When an exemplary minority application was received by a department, it was immediately forwarded for consideration as one of the diversity program hires, which, if selected, would essentially allow the department to add two new faculty members to their staff for the cost of one (Aguirre Jr., 2000). The problem was that when the departments forwarded the applications to the diversity program for consideration, they also removed the candidate from consideration

for the regular faculty position, using the justification that it was not fair for the minority candidate to receive consideration for two positions (the regular faculty position that they applied for, and the special diversity position that is funded by the university). Essentially, this meant that the only minority hires for the entire university were those hired through this special program (Aguirre Jr., 2000). The program may boast five minority hires in a year (which seems good), but those five hires represent all minority hires for the university (which is not good). In practice, the program eliminates the opportunity to compete for an advertised faculty position and puts the blame on the diversity program if the minority candidate is not hired, alleviating blame on the department for not pursuing a more diverse faculty. While the data might look quite good, holes can be found that unveil problematic realities when the university begins to tell the story behind the program.

This example highlights the reason why the story behind the data should not just be appreciated but expected. Certainly, the use of narratives about the data can benefit the analysts by appealing to the emotions of the reader, but it also benefits the reader by revealing more context. Narratives keep the "suspect" talking rather than just getting away with a line like "I was at my brother's house." This does not mean that storytelling will reveal all bias in every dataset. Indeed, a good storyteller may even be able to cover-up bias with a compelling story. However, the more that is said about the data will likely be for the better, especially for those who lack familiarity with the data, or the analyses performed. This is the standard that most peer-reviewed publications hold their authors to when reporting the methodology for their studies, though the same standard is not always expected for other forms of data reporting.

## Data Storytelling in Library and Information Science

Libraries frequently leverage data to demonstrate usage and other facets of library operations, though not always using storytelling to make this data fresh and appealing. Lessick (2016) gives several examples of projects operating in medical libraries that capitalize on the power of data visualizations and infographics to organize data, such as dashboards on a library's website that display the library's usage statistics. Several academic librarians have shown similar interests in using data visualizations and storytelling to make compelling arguments about academic library usage and resource allocation (Magnuson, 2016; Murphy, 2015). Interest in learning analytics (data about learners and educational outcomes) has particularly grown in recent years, though there have been concerns raised about the ethics of such analyses (Jantti & Heath, 2016; Jones & Salo, 2018).

The art of data storytelling, however, is presently a limited area of practice within librarianship. Data science itself is still a young field, though it is rapidly gaining interest among library and information science researchers, as is evident from the rapid growth in the number of data science publications in LIS journals (Marchionini, 2016; Virkus & Garoufallou, 2019). There is likely still a misguided adherence to data and data analysis as an objective science among many library professionals and LIS researchers, owing perhaps, in part, to a general lack of a data literacy among these groups of individuals. Librarians also may not see storytelling as a major part of their professional role—yet if they work with data of any kind, from organizational data (e.g., patron statistics, financial, subscriptions) to research data, they are engaged in some form of storytelling about that data.

## An Example of Contrasting Data Narratives in Library and Information Science

As discussed previously, there are always multiple, often contrasting, stories that can be told with a set of data. Imagine an individual is a member of an editorial board of a major librarianship journal, tasked with analyzing the authorship of the journal over the past two decades and identifying potential priorities for soliciting new submissions, expanding the editorial board, and more. Figure 1 is a chart they may have created to display the gender of authors in each volume, based on an author survey (this is fictional data used for illustrative purposes).
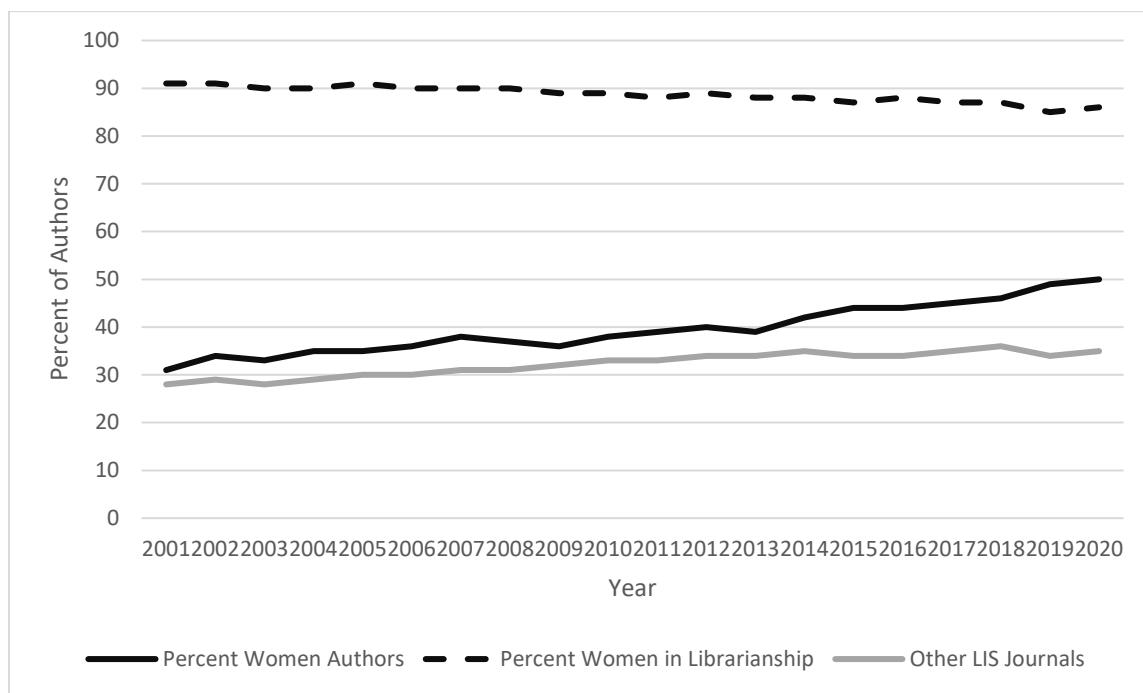


*Figure 1. Example of a basic data visualization–Women authors*

If only the solid lines (percent women authors in this journal and percent for other LIS journals) are shown, it appears that this journal is doing a good job at recruiting women authors relative to other journals. However, the dashed line shows that, relative to the gender composition within the profession, the journal is doing quite poorly in this area—certainly nothing about which to brag. There is no doubt that as information organizations become increasingly data-driven, certain narratives will emerge above others due to systemic inequities among those who are working the data.

Would a white male analyst be more likely to omit the dashed line and focus on how well the journal is doing compared to its peers? Should a white male be doing an analysis about women authorship? Are there even more ways to break down and compare data in this visualization that I, as the author of this article and a white male, am not thinking about? For instance, since "women" is a very diverse group, does it make sense to present this statistic in its amalgamated form? These are questions that members on the editorial board could ask when deciding who should perform the analysis. Similarly, if a library is analyzing data about usage among different

demographic populations, should the three white men who are most interested in statistics be the team in charge of analysis, or should diversity be prioritized even if it means a sharper learning curve on data/statistics for some members of the team?

Again, data analysis/storytelling is not a neutral art. Researchers with experience in theory-informed quantitative studies may understand that there are rarely any definitive answers or perfect alignments, but the public often accepts statistics and discussion of their significance as objective facts (Durand et al., 2020). The previous example emphasizes why that acceptance can be so problematic. A good storyteller, or group of storytellers, with a mind towards uncovering biases to whatever extent they exist in the data, is necessary to break from patterns of systematic (if possibly unconscious) oppression. The talent of master storytellers in hip hop music (below) may provide a guide to how personal narratives, social justice themes, and repetition can produce powerful data stories. The translation of this approach to data analysis may help further unveil biases that are baked into research organizations and have traditionally been overlooked during organizational assessments and planning.

## Data and Hip Hop: Telling a Compelling Story and Acknowledging Biases

"Storytelling distinguishes rap from other forms of popular music" (Bradley, 2009, p. 157).

### The Art of Storytelling

Like with Kelliher and Slaney's (2012) classifications of data storytelling, hip hop music can also be seen as telling different types of stories: those that inform, those that explain, those that persuade, and those that entertain. To a reader who does not listen to much hip hop music other than what is played on pop radio stations, it may seem like most every song is mainly meant to entertain. Certainly, all songs intend to entertain to some extent, but most also have another motive. They tell real stories about the rapper's life that are meant to have some genuine impact on the listener. From these stories, we can learn a lot about what makes storytellers (whether data storytellers or rappers) successful in appealing to audiences and communicating effective messages that can challenge listener biases.

Many great hip hop songs are designed as narratives about "street life", informing the listener about the harsh life of working low-end jobs, growing up with little parental oversight, or resorting to a life of drug dealing. The Notorious B.I.G.'s (aka Biggie Smalls) "Everyday Struggle" is simultaneously gritty and beautiful, with the lyrics focusing on the real life of a drug kingpin over a track that samples Dave Grusin's "Either Way". The lyrics portray Biggie as an unenviable figure who struggles to make ends meet while raising his child, is constantly looked down upon by society, and lacks meaningful relationships. The hook sums up Biggie's feelings about his experiences: "I don't wanna live no more / Sometimes I hear death knockin' at my front door / I'm livin' everyday like a hustle, another drug to juggle / Another day, another struggle" (Wallace, 1994, track 11).

The "beauty" of this track is that it does not attempt to clean things up. Instead, it is determined to communicate the unabashed reality—even though this does significantly limit the likelihood that the track would receive radio airplay. Biggie's raw style of telling things as they were without embellishment catapulted him into prominence and helped promote what Peterson (2007) calls a "paradigm shift" in hip hop music, which at the time had been dominated by the west coast hip hop scene.

Kendrick Lamar has received constant criticism from the conservative and Christian right within the United States for his lyrics, which he references by playing a sample of Geraldo Rivera's criticism of Kendrick's 2015 album— "This is why I say that hip hop has done more damage to young African Americans than racism in recent years"—in his 2017 hit single "DNA" (track 2). However, Kendrick's message throughout his work encourages pride in Black culture, rather than violence against one another, and reflects his own Christian beliefs, which he references in virtually every track. In "How Much a Dollar Cost" (a track which then-President Obama named among his favorite of 2015), Kendrick tells a story of greed and lack of empathy for a homeless man who begs him for money. When the homeless man quotes the Bible (Exodus 14) it causes Kendrick to reflect on the power and obligation one man has for leading the sick, scared, and oppressed away from suffering. Kendrick feels regret and remorse and begs for forgiveness, at which point the homeless man reveals himself to be God. The final verse of the song ends:

> He looked at me and said, "know the truth, it'll set you free. You're looking at the Messiah, the son of Jehovah, the higher power, the choir that spoke the word, the Holy Spirit, the nerve of Nazareth, and I'll tell you just how much a dollar cost, the price of having a spot in Heaven, embrace your loss—I am God." (Duckworth, 2015, track 11)

The beauty of this song is that it can speak to everyone in different ways—like a Bible verse of its own. Given the oppression that Kendrick speaks of in the rest of the album, he deserves no guilt himself and yet he feels it and speaks to it. As a white person who listens to this track within the context of the entire album, it is hard not to think that Kendrick is speaking directly to you—not necessarily about literal dollars, but of the debt that we, as privileged as we are in society, owe to those who were made to be less fortunate through birth circumstances rather than the merits of their works. Kendrick's tracks blend Black cultural philosophy, Christian philosophy, and postmodern philosophy with his brand of lyrical poetry in a way that most doctorates and professional poets would not be capable.

This track plays on your own innate biases as a listener through the art of the slow reveal. Certainly, you could include a line in a song saying that "greed is sinful" or (in the case of data visualizations) show a chart that depicts how many homeless people go hungry on a given day, but it is through discovering their own biases as well as forging an emotional connection with the "bum" that the message really comes across to the listener. If you listen to "How Much a Dollar Cost" and then read that millions of U.S. children and adults go hungry each day, you feel a lot worse about foregoing a donation to charity in favor of upgrading your own combo meal.

## Genuine Storytelling

Chiles, Stevens, and Stewart (2019) discuss how the rhyming and storytelling characteristics of hip hop music helped them to learn and teach multiplication tables, overcome stuttering, and teach cross-culturalism and social issues. What elements make hip hop such a beneficial educational tool for them? There are several: repetitive patterns of key points (e.g., the hook or chorus of a song), emotional and experiential genuineness (e.g., the inclusion of explicit language as a powerful tool for the rapper to demonstrate that they will not allow their genuine thoughts to be censored), and cultural references (these can date tracks over time, but in the moment present important points of social connection) (McLeod, 1999; Perry, 2004; Rudrow, 2020).

One of the undervalued elements behind the success of hip hop music is its appeal to a shared set of values. Commonly, in this music, the values may relate to religion (e.g., the music of

Kendrick Lamar), or racial equity (Miller et al., 2014). In data storytelling, the shared values may be those of the analyst and readers/viewers (e.g., library and information professionals). In hip hop music, these values are carefully woven into the storytelling through language choice and social-cultural references. When Biggie Smalls says in "Everyday Struggle," "I know how it feels to wake up, fucked up. Pockets broke as hell…," he is relating to an experience shared by many of his listeners. He is using a shared vocabulary with colloquial terms/phrases (e.g., "pockets broke as hell") and shared beliefs (e.g., that you should go get "your" money). When Kendrick Lamar says, "the price of having a spot in Heaven, embrace your loss," he is referencing a shared belief in God and divine retribution to make a point about the earthly act of selfishness. The effectiveness of hip hop music in achieving this social and emotional connection has not gone unnoticed. Several studies have illustrated the power of social and emotional connections, as hip hop music has been successfully used as an element in therapy and diversity training (Baszile, 2009; Levy, 2019; Levy & Keum, 2014).

Emotional appeals (ranging from anger and fear to excitement and empathy) are already known by marketing researchers to be effective tools for gaining customers and attaining loyalty (Achar et al., 2016; Kemp et al., 2013; Zhang et al., 2014). These appeals are also popular in politics (Dowding, 2016). Populist politicians are known to exploit emotions of anger for political gain (Ost, 2004; Widmann, 2021). So, it should be of little surprise that emotional appeals can play a major role in the effectiveness of data storytelling as well (Kostelnick, 2016; Kim, 2019). Hip hop music has arguably mastered the art of the emotional appeal, with Jonas (2021) even showing that product placement in rap songs improves listeners' opinions of the products/brands as a sort of transitive effect. It is an acknowledged objection of the status quo, room for new, authentic voices and (true to postmodern epistemology) voices and perspectives that have traditionally been suppressed, and social connection between the rapper and the listener that may produce an emotional connection between the two (Kitwana, 2005; Morgan, 2016).

## The Challenge and Essence of Hip Hop Storytelling for Data Storytelling

All forms of storytelling are reduceable to a shared set of components. Storytelling is subjective and political, and its effectiveness is heavily influenced by the use of language and emotion. This means that the person telling the story can influence every aspect of the narrative. If one wants to take an emancipatory rather than self-serving approach, it is worthwhile to study the approaches of those who master storytelling. This study can include literature, such as the work of Alice Walker and Caroline Perez, but it can also include nontraditional forms of storytelling, like rap and hip hop music.

Hip hop music has always pushed back against the notion that there is only one narrative worth hearing. For nearly five decades, hip hop has been instrumental in fighting misperceptions about an entire population of young storytellers, particularly those from traditionally marginalized populations. It has challenged how we define music itself. The idea of taking a hip hop approach to data storytelling, or scholarly publishing and criticism (as outlined in the example above), could thus be highly controversial, just as hip hop music itself has been. However, the very fact that such an approach is controversial underscores why it is so important. If something was inconsequential to the status-quo, then no one would waste their time opposing it. Too often, those overseeing the production and interpretation of data are influenced by the "traditional" ways of storytelling, as defined by editorial boards and reviewers of scholarly journals or managers at a workplace, all of which skew—both historically and in the present day— to a white, male, and Eurocentric view.

## Conclusion

The power of data to inform and persuade audiences is limited by the extent to which the audience understands and is engaged with the data. This is why the capacity of data storytelling to weave a cohesive and moving narrative is so important. Looking to the masters of the art of storytelling may inform new ways of crafting data narratives. When looking at the master storytellers in hip hop, one can see clearly how emotional appeals, social connections, social justice, and radical change can be intertwined into data storytelling to push narratives beyond simple bulleted lists of points. Analysts and storytellers may apply a personal framework to dig deeper into social inequities evident in the data they analyze, as opposed to looking at data visualization and interpretation as politically neutral. While data itself may be neutral, the interpretation of data never is.

## Positionality Disclosure

This essay presents the perspective of a single author who is actively involved in the field of data studies/storytelling and regularly finds influence from the storytelling of hip hop music. As with hip hop music itself, this essay represents the author's own experiences and interpretations, which may vary from the experiences of others (including the references to tracks with explicit content or allusions to the Abrahamic conception of God). With so much hip hop music in existence, it is possible to find tracks that can serve as examples or supporting evidence for a wide range of ethical, cultural, and storytelling perspectives. The few examples in the paper were selected to support the particular perspective presented, but hip hop is a very diverse art form. The purpose of this essay, in keeping with the theme of this special issue, is to explore what relevance hip hop storytelling may have to data storytelling (within the domain of information science). Further works may explore more broadly the importance of a social justice mindset in data storytelling, but the purpose of this essay and the special issue is to specifically examine the potential influence of hip hop.

## References

Achar, C., So, J., Agrawal, N., & Duhachek, A. (2016). What we feel and why we buy: The influence of emotions on consumer decision-making. *Current Opinion in Psychology, 10*, 166-170. https://doi.org/10.1016/j.copsyc.2016.01.009

Aguirre Jr., A. (2000). Academic storytelling: A critical race theory story of affirmative action. *Sociological Perspectives, 43*(2), 319-339. https://doi.org/10.2307/1389799

Baszile, D. T. (2009). Deal with it we must: Education, social justice, and the curriculum of hip hop culture. *Equity and Excellence in Education, 42*(1), 6-19. https://doi.org/10.1080/10665680802594576

Boldosova, V., & Luoto, S. (2019). Storytelling, business analytics, and big data interpretation: Literature review and theoretical propositions. *Management Research Review, 43*(2), 204-222. https://doi.org/10.1108/MRR-03-2019-0106

Bradley, A. (2009). *Book of rhymes: The poetics of hip hop.* Civitas.

Chiles, K., Stevens, C., & Stewart, D. (2019). Rap and storytelling in the classroom. Athena: *University of South Carolina Opportunity Scholars Program Research and Literary Journal, 2*, 40-49.

Davenport, Thomas. (2014, May 5). *10 Kinds of stories to tell with data*. Harvard Business Review. https://hbr.org/2014/05/10-kinds-of-stories-to-tell-with-data

Dowding, K. (2016). Emotional appeals in politics and deliberation. *Critical Review of International Social and Political Philosophy, 21*(2), 242-260. https://doi.org/10.1080/13698230.2016.1196536

Duckworth, K. L. (2015). How much a dollar cost? [Song]. On *To pimp a butterfly* [Album]. Interscope Records.

Duckworth, K. L. (2017). DNA [Song]. On *Damn* [Album]. Top Dawg Entertainment, Aftermath Entertainment, & Interscope Records.

Durand, M. A., Yen, R. W., O'Malley, J., Elwyn, G., & Mancini, J. (2020). Graph literacy matters: Examining the association between graph literacy, health literacy, and numeracy in a Medicaid eligible population. *PloS One, 15*(11), e0241844. https://doi.org/10.1371/journal.pone.0241844

Dykes, B. (2020). *Effective data storytelling*. Wiley Publishing.

Echeverria, V., Martinez-Maldonado, R., Granda, R., Chiluiza, K., Conati, C., & Shum, S. B. (2018). Driving data storytelling from learning design. *International Conference on Learning Analytics and Knowledge, 8*, 131-140. https://doi.org/10.1145/3170358.3170380

El-Wakeel, F., Jiles, L., & Lawson, R. (2020). Storytelling with data visualization. *Strategic Finance, 102*(6), 34-39.

Gray, J., Chambers, L., & Bounegru, L. (2012). Data stories. In *Data journalism handbook: How journalists can use data to improve the news* (pp.159-161). O'Reilly.

Jantti, M., & Heath, J. (2016). What role for libraries in learning analytics? *Performance Measurement and Metrics, 17*(2), 203-219. https://doi.org/10.1108/PMM-04-2016-0020

Jonas, P. (2021). Marketing collaborations between luxury brands and hip-hop artists: An analysis of community feedback on Instagram. *Journal of Digital and Social Media Marketing, 9*(1), 53-67.

Jones, K. M. L., & Salo, D. (2018). Learning analytics and the academic library: Professional ethics commitments at a crossroads. *College and Research Libraries, 79*(3), 304-323. https://doi.org/10.5860/crl.79.3.304

Kang, Martha. (2016). *Exploring the 7 different types of data stories*. Mediashift. http://mediashift.org/2015/06/exploring-the-7-different-types-of-data-stories/

Kelliher, A., & Slaney, M. (2012). Tell me a story. *IEEE multimedia, 19*(1), 4-6. https://doi.org/10.1109/MMUL.2012.13

Kemp, E., Kennett-Hensel, P. A., & Kees, J. (2013). Pulling on heartstrings: Examining the effects of emotions and gender in persuasive appeals. *Journal of Advertising, 42*(1), 69-79. https://doi.org/10.1080/00913367.2012.749084

Kim, N. W. (2019). From exploration to explanation: Designing for visual data storytelling influence on donors' emotions and intentions. *Journal of Business Research, 63*(7), 754-762.

Kitwana, B. (2005). *Why white kids love hip-hop.* Civitas Books.

Knaflic, C. N. (2015). *Storytelling with data.* Wiley.

Kosara, R., & MacKinlay, J. (2013). Storytelling: The next step for visualization. *Computer, 46*(5), 44-50.

Kostelnick, C. (2016). The re-emergence of emotional appeals in interactive data visualization. *Technical Communication, 63*(2), 116-135.

Lessick, S. (2016). Tooling up to facilitate findability, virtual collaboration, and storytelling with data. *Journal of the Medical Library Association, 104*(4), 354-362. https://dx.doi.org/10.3163%2F1536-5050.104.4.021

Levy, I. (2019). Hip-hop and spoken word therapy in urban school counseling. *Professional School Counseling, 22.* https://doi.org/10.1177/2156759X19834436

Levy, I., & Keum, B. T. (2014). Hip-hop emotional exploration in men. *Journal of Poetry Therapy, 27*(4), 217-223. https://doi.org/10.1080/08893675.2014.949528

Liem, J., Perin, C., & Wood, J. (2020). Structure and empathy in visual data storytelling: Evaluating their influence on attitude. *Computer Graphics Forum.* https://hal.archives-ouvertes.fr/hal-02861224

Magnuson, L. (2016). *Data visualization: A guide to visual storytelling for libraries.* Rowman and Littlefield.

Marchionini, G. (2016). Information science roles in the emerging field of data science. *Journal of Data and Information Science, 1*(2), 1-6. https://doi.org/10.20309/jdis.201609

McCabe, A., & Peterson, C. (1984). What makes a good story? *Journal of Psycholinguistic Research, 13*(6), 457-480. https://doi.org/10.1007/BF01068179

McLeod, K. (1999). Authenticity within hip hop and other cultures threatened with assimilation. *Journal of Communication, 49*(4), 134-150. https://doi.org/10.1111/j.1460-2466.1999.tb02821.x

Miller, M., Hodge, D. W., Coleman, J., & Chaney, C. D. (2014). The hip in hip hop: Toward a discipline of hip hop studies. *Journal of Hip Hop Studies, 1.*

Morgan, M. (2016). The world is yours: The globalization of hip-hop language. *Social Identities, 22*(2), 133-149. https://doi.org/10.1080/13504630.2015.1121569

Murphy, S. A. (2015). How data visualization supports academic library assessment. *College and Research Libraries News, 76*(9), 482-486.

Ojo, A., & Heravi, B. (2017). Patterns in award winning data storytelling. *Digital Journalism, 6*(6), 693-718. https://doi.org/10.1080/21670811.2017.1403291

Ost, D. (2004). Politics as the mobilization of anger: Emotions in movements and in power. *European Journal of Social Theory, 7*(2), 229-244. https://doi.org/10.1177%2F1368431004041753

Perry, I. (2004). *Prophets of the hood: Politics and poetics in hip hop*. Duke University Press.

Peterson, J. (2007). Notorious B.I.G. In M. Hess (ed.), *Icons of hip hop: An encyclopedia of the movement, music, and culture* (p. 424). Greenwood Press.

Rudrow, K. J. (2020). "I was scared to death": Storytelling, masculinity, and vulnerability in "Wet Dreamz." *Critical Studies in Media Communication, 37*(2), 148-160. https://doi.org/10.1080/15295036.2020.1741660

U. S. Bureau of Labor Statistics. (2021). *Labor force statistics from the current population survey*. Retrieved from https://bls.gov/ops/opsaat11.atm

Virkus, S., & Garoufallou, E. (2019). Data science from a library and information science perspective. *Data Technologies and Applications, 53*(4), 422-441. https://doi.org/10.1108/DTA-05-2019-0076

Wallace, C. (1994). Everyday struggle [Song]. On *Ready to die* [Album]. Bad Boy Records.

Widmann, T. (2021). How emotional are populists really? Factors explaining emotional appeals in the communication of political parties. *Political Psychology, 42*(1), 163-181. https://doi.org/10.1111/pops.12693

Zhang, H., Sun, J., Liu, F., & Knight, J. (2014). Be rational or be emotional: Advertising appeals, service types and consumer responses. *European Journal of Marketing, 48*(11/12), 2105-2126. https://doi.org/10.1108/EJM-10-2012-0613

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