# COMPROMISING CONNECTIVITY

## INFORMATION DYNAMICS BETWEEN THE STATE AND SOCIETY IN A DIGITIZING NORTH KOREA

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## DATA SOURCES

This study primarily draws from:

- The 2015 Broadcasting Board of Governors (BBG) Survey of North Korea Refugees, Defectors and Travelers (N=350)

- A qualitative study comprised of 34 interviews with specifically recruited recent defectors conducted in May and June of 2016 specifically for this report

- Technical analyses of available North Korean software and hardware

## CAVEATS

Much of the research conducted for this study was based on interviews with North Korean defectors, refugees and travelers. These individuals represent some of the best sources of current information about North Korea. However, defector, refugees and travelers do not necessarily reflect in equal measure or intensity the thoughts, opinions or behaviors of those still in-country. Furthermore, like all studies of North Korea, quantitative findings presented in this report are not statistically representative of the North Korean population. Broad national implications should not be drawn from this research without these important caveats firmly in mind.

## ACKNOWLEDGEMENTS

# THE CONTINUING EVOLUTION OF THE INFORMATION ENVIRONMENT

In 2012, *A Quiet Opening: North Koreans in a Changing Media Environment*[1] described the effects of the steady dissolution of North Korea's information blockade. Precipitated by the collapse of the state economy during the famine of the 1990s, North Korea's once strict external and internal controls on the flow of information atrophied as North Korean citizens traded with one another, and goods and people flowed across the border with China. Activities unthinkable in Kim Il Sung's day became normalized, even if many remained technically illegal. A decade into the 21st century, North Korea was no longer perfectly sealed off from the outside world and its citizens were much more connected to each other. Continued research suggests that many of the trends toward greater information access and sharing detailed in *A Quiet Opening* persist today. Yet, over the last four years, since Kim Jong Un's emergence as leader, the picture has become more complicated.

It is tempting to view the dynamics surrounding media access and information flow in North Korea as a simple tug-of-war: North Korean citizens gain greater access to a broader range of media and communication devices, and unsanctioned content. The North Korean government, realizing this, responds through crackdowns in an attempt to reconstitute its blockade on foreign information and limit the types of media and communication devices its citizens can access. However, the reality is not so neatly binary. As the North Korean economic situation rebounded after the famine and achieved relative stability,[2] authorities developed strategies to establish new, more modern forms of control within an environment that was fundamentally altered from its pre-famine state.

Among the most significant trends to emerge in the North Korean information environment under Kim Jong Un is the shift toward greater media digitization and the expansion of networked communications. The state has ceded and now sanctioned a considerably greater level of interconnectedness between private North Korean citizens. This, at least in part, may be an acknowledgement the market economy in North Korea is here to stay, and thus the communications channels that enable the processes of a market economy must be co-opted and supported rather than rolled back.[3] Although the government continues to make efforts to monitor communications and dictate what subjects are off-limits, it is allowing average citizens far greater access to communications technologies. Greater digitization and digital network access are already having profound effects on the basic dynamics and capabilities that define the information space in North Korea.

The expansion and catalyzation of person-to-person communication through mobile phones and other networked digital technologies is in many ways a promising development. However, as this report will document, from both a user and technical perspective, expanding network connectivity to a broad swath of the population is arming the North Korean government with a new array of censorship and surveillance tools that go beyond what is observed even in other authoritarian states or closed media environments. It is clear that the state's information control strategy, while changing, is not ad hoc or ill-considered. Recent technological innovations and policy changes, on balance, may be giving the North Korean government more control than they are ceding.

In fact, this report's title, Compromising Connectivity, is a nod to the dualistic nature of digital network expansion in North Korea. The state is compromising with its own citizens and the imperatives of a market economy by introducing legal digital communications and further normalizing horizontal connections among ordinary North Koreans, something it long sought to prevent. At the same time however, as North Korean citizens connect to state-run digital networks their communications and other activities are compromised by new advanced digital censorship and surveillance tools that are increasingly replacing an atrophying human security apparatus.

Near total
information blockade
and broad-based human
security network

Breakdown of
traditional security and
information control
apparatus leading to greater
information circulation and
horizontal connections
between people

Networked
information
censorship and
monitoring strategy, but
horizontal connections
catalyzed

INFORMATION
BLOCKADE

POST-FAMINE
OPENING

EMERGING
DIGITIZATION
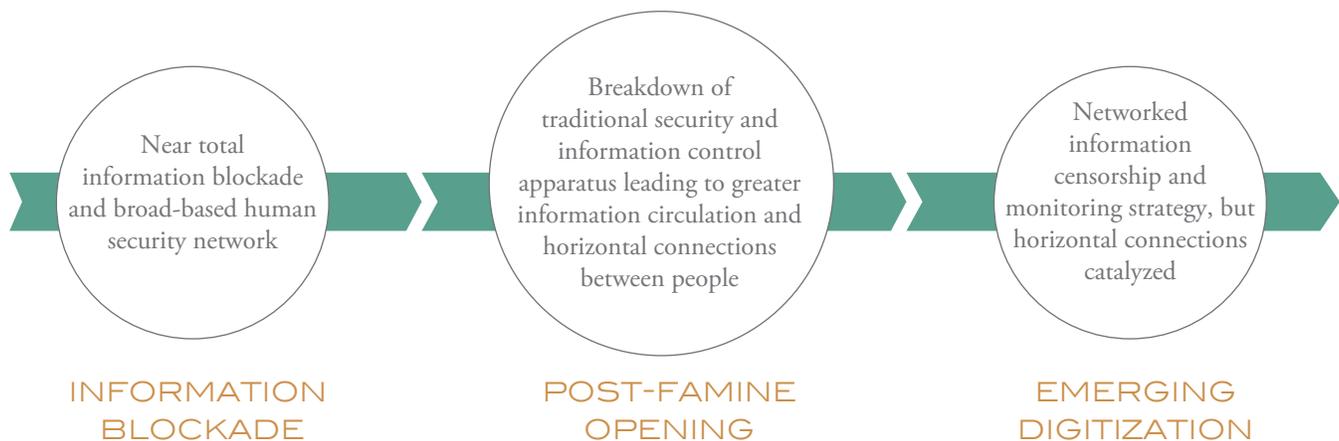
Even as legal digitally networked devices completely revise some features of the state's previous information control strategy, with very few exceptions, foreign media remains strictly illegal and those who are caught accessing it can be subject to harsh punishments. It is unquestionable that the North Korean regime still seeks to tightly control the types of information and media content its citizens consume. Credible and continuous crackdowns on foreign media content have come to define the Kim Jong Un era. While research conducted for this study indicates consumption of foreign media has not dropped off as a direct result, special units, such as Group 109, tasked with enforcing bans on illegal content, have been formed and empowered. Accessing foreign media has become more, not less, sensitive in recent years.

These signs suggest that authorities are attempting to reassert control by modernizing rather than merely recreating the economy and surveillance state of the Kim Il Sung era. The state is now conducting more active strategic management of the information space. It is seeking new technologically enabled ways to shape the information environment that meet its surveillance and security needs, as well as spur economic growth, and create the appearance of development and modernization for the benefit of its own people and outside observers alike. While attempting to strike this balance, the North Korean government itself has in recent years allowed or even introduced some of the most transformative media and communications devices available in the country. This suggests the start of a new era of strongly state-influenced digitization that is characterized by both sophisticated crackdowns on illegal media content and the introduction of legal digital communications channels, currently best exemplified by mobile phones. This trend marks a significant departure from the relatively rapid, but spontaneous and largely uncontrolled, increases in access to information of the initial post-famine opening period described in *A Quiet Opening*.

This report investigates the impact of media and communications developments on the information environment in North Korea, as well as efforts taken by North Korean authorities to shape the information environment to meet their own goals. To this end, the report also examines the current environment through a number of important conceptual dimensions, including:

Traditional media vs. digital media
Natural evolution vs. state direction
State co-opt vs. crackdown
Media content vs. communications channels
Digitally networked vs. non-networked technologies
Human- vs. device- vs. network-level perspectives

Taken together and somewhat impressionistically, we might think of these dimensions playing out in roughly the following way in North Korea today. Technology is facilitating a shift toward digital forms of media consumption. This move toward digital media devices such as USB drives is naturally occurring and has been driven by ordinary citizens, as these devices have become available and proven well suited to the North Korean context. At the same time, the state is developing new strategies to regain control over the media environment in the country. The government, realizing that it cannot reinstate its near complete pre-famine information blockade, has thus adopted a strategy of accepting and co-opting certain forms of media and communications channels. The state is thereby actively attempting to shape and direct the country's increasing digitization in its own best interest. Both this presumed strategic vision and the details of many of the state's recent technological and policy decisions suggest the possibility for greater expansion of digitally networked spaces via mobile phones, intranet or potentially even internet. In practice, this looks like an attempt to reap the economic and surveillance benefits of new modern digitally networked communications channels while redoubling its efforts to curb the consumption of unsanctioned media content.

These conceptual frameworks will be helpful to keep in mind as the report presents data on the current, quickly evolving North Korean media and information landscape. Data were gathered primarily from surveys and qualitative interviews with recent North Korean refugees, defectors and travelers, who experienced recent changes in the information space firsthand.

# GENERAL MEDIA ENVIRONMENT

## SOURCES OF INFORMATION

Survey data reveals a continued broadening and deepening of media access in North Korea during the Kim Jong Un era. However, it is important to keep in mind the incredibly low baseline from which the country is starting. There is effectively no independent domestic media. Foreign media is strictly prohibited and attempts to access outside news and information can be met with harsh punishments. Freedom House ranks North Korea at the bottom of its Freedom of the Press index[4] and Reporters Without Borders ranks it second to last ahead of only Eritrea.[5] Given the state of the media, it is thus natural that, like other severe authoritarian contexts, North Koreans rely on human sources, mostly word-of-mouth, for much of the information they receive.

### FIGURE 1: TOP SOURCES OF INFORMATION IN NORTH KOREA
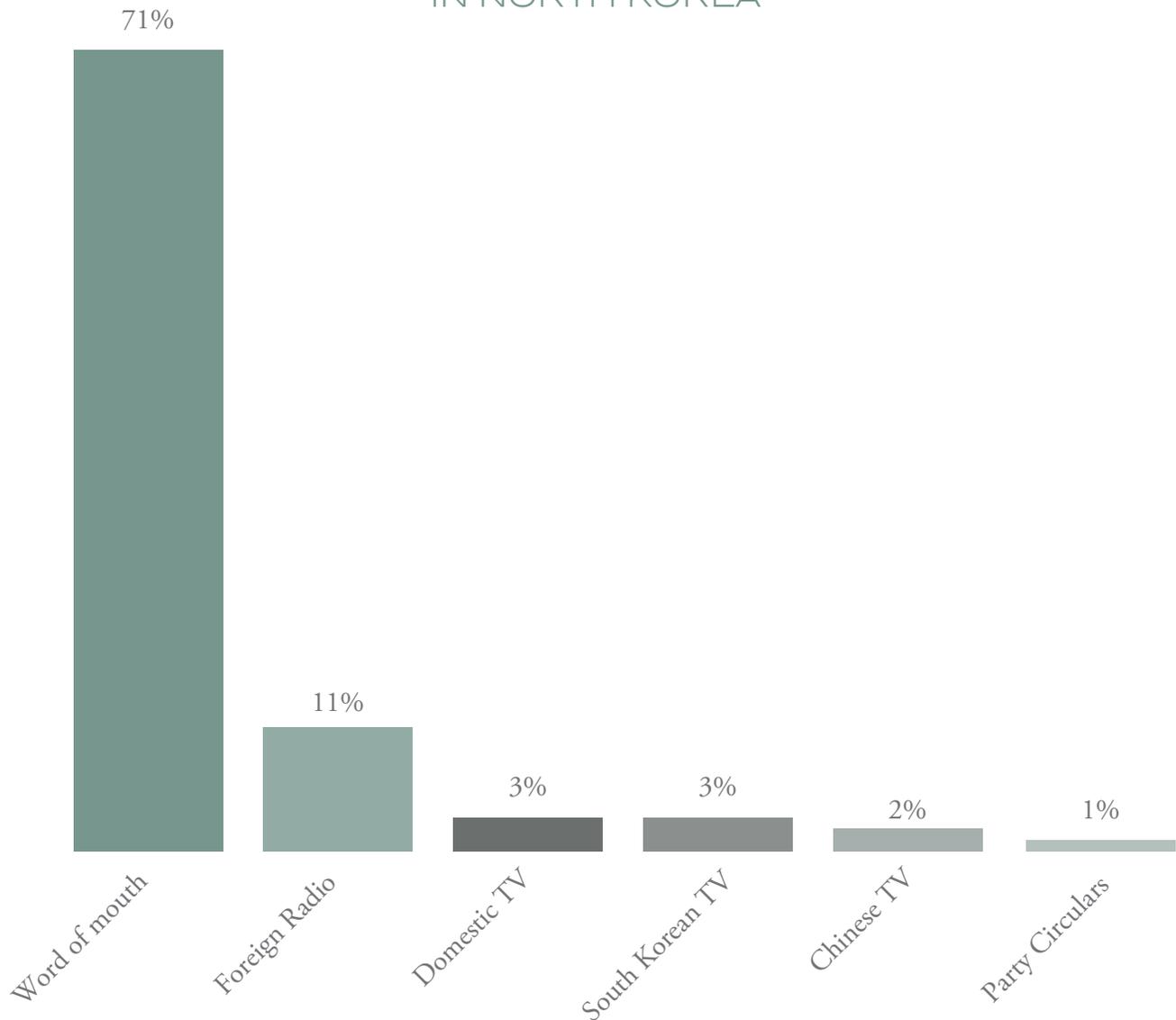


BBG Survey of North Korea Refugees, Defectors and Travelers (2015, N=350)

After word-of-mouth, commonly cited trusted sources of information include a variety of media both foreign and domestic across multiple platforms. The large disparity in reliance on human sources of information when compared with media sources underscores how information poor most media in North Korea is – particularly when one looks at how North Koreans obtain the kind of information that is useful to them in their daily lives. As this report will outline, North Koreans consume a greater amount and diversity of media content than in the past. Yet, most of it remains inferior to word-of-mouth for serving routine informational needs.

*My perception completely changed in 1997 after meeting Korean people in China and watching Korean TV. While I cannot entirely deny the influence of listening to the radio, the decisive experience was when I met Korean people.*

*- Male, 59, Pyonganbukdo, Pyonganbukdo People's Committee affiliated trading company, Left NK 2013*

One partial exception to this appears to be foreign radio. While only 11 percent cited it as their most important source of information, this represents more than one-third of the total foreign radio audience. That means a substantial proportion of listeners relied primarily on the broadcasts as a key source of information important to their daily lives.

Levels of exposure to non-sanctioned information through media sources vary in North Korea from those who, fearing repercussions, made explicit efforts to avoid it…

*When I lived in Bakchon County, I did not particularly seek out any information. It would not be an exaggeration to say that I did not even know the word "South Korea" [Hanguk/한국] prior to going to China to earn money and living in Hyesan for three months.*

*- Male, 29, Pyonganbukdo, Paper factory employee/83 worker,[6] Left NK 2014*

…to those who relied upon outside information as a tool for business…

*When I was in North Korea, I recognized that if North-South Korea relations were not good, everything would be cut off. The regime would also state they were unable to bring rice because the U.S. blocked them en route. Merchants would stockpile rice. For example, if one kilogram of rice was bought at 5,000 won, and if the price subsequently went up to 6,000 won, the merchants would then turn around and sell tons of rice to people. In my case, I did not go to the extent of stockpiling rice for the purposes of reselling. I would just buy a little more rice with the money I had, thinking I would not have to buy it at an expensive price later. If politics suffered difficulties, people would tend to hold foreign currencies.*

*- Female, 49, Hamkyongbukdo, Diesel oil seller, Left NK 2013*

…to those for whom illegal information came with a search for entertainment or escape.

*Even though it was scary to watch South Korean dramas [because it was dangerous], I continued to watch because it was fun. I began to dream of a new world while watching South Korean dramas. The streets of South Korea, places such as Myeongdong became familiar to me after watching many South Korean dramas.*

*- Female, 20, Hamkyongbukdo, Candy maker, Left NK 2013*

# MEDIA AND COMMUNICATIONS DEVICES

The development and diversification of the media environment in North Korea is powerfully underscored by the wide range of media devices that a substantial proportion of North Koreans can now access. Accessible, affordable, appealing and legal, media devices such as televisions and DVD players have reached near ubiquity in North Korea, with access and ownership a common phenomenon across nearly all demographic, socio-economic and political class divides.

## FIGURE 2: MEDIA AND COMMUNICATIONS DEVICE ACCESS
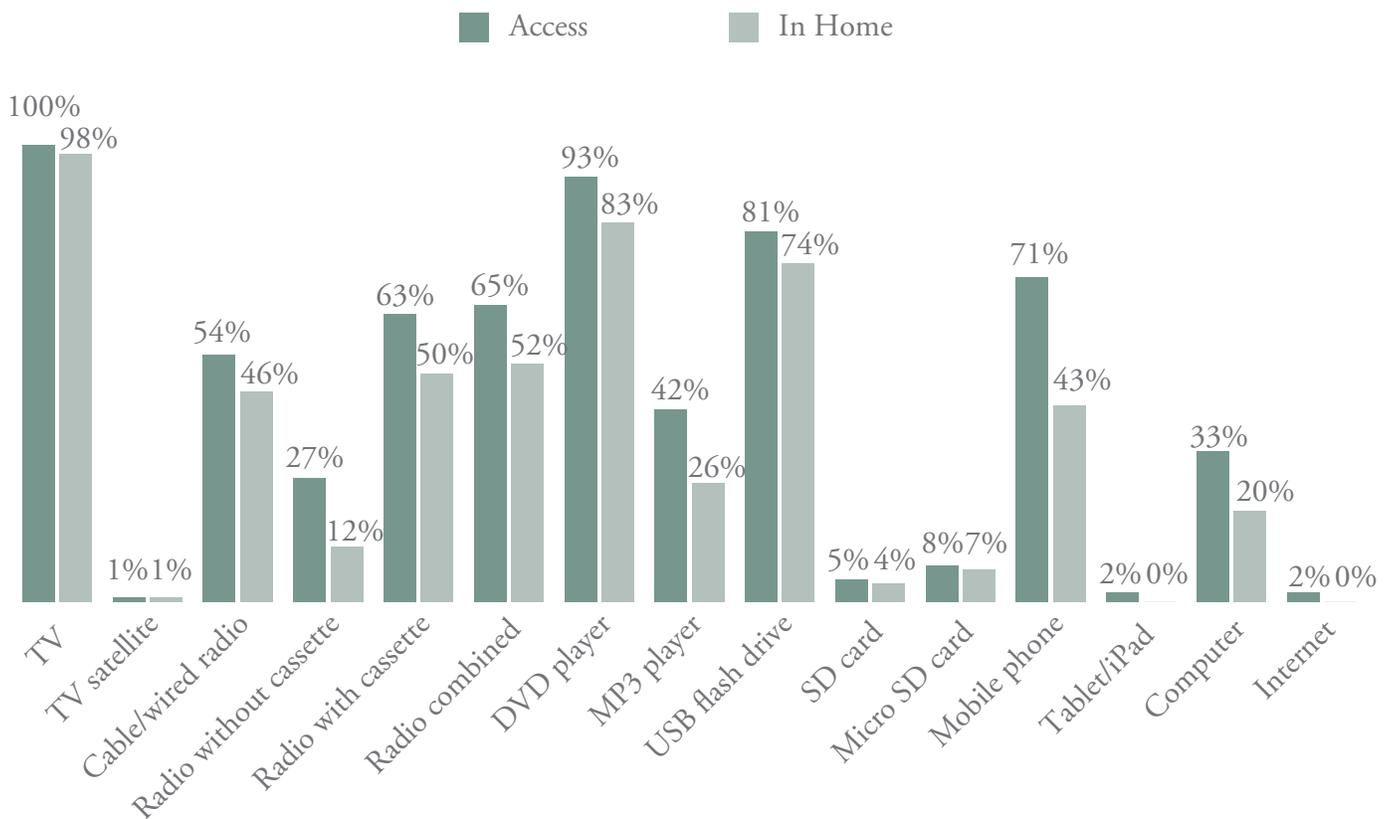


BBG Survey of North Korea Refugees, Defectors and Travelers (2015, N=350)

Some of the prevailing dynamics around device use patterns can be revealed when we examine which devices respondents were likely to be able to access without necessarily owning them in their homes. Generally, disparities in use patterns are driven by price, perceived usefulness and the level of sensitivity of the device in question.

## FIGURE 3: MEDIA AND COMMUNICATION DEVICE ACCESS BY YEAR
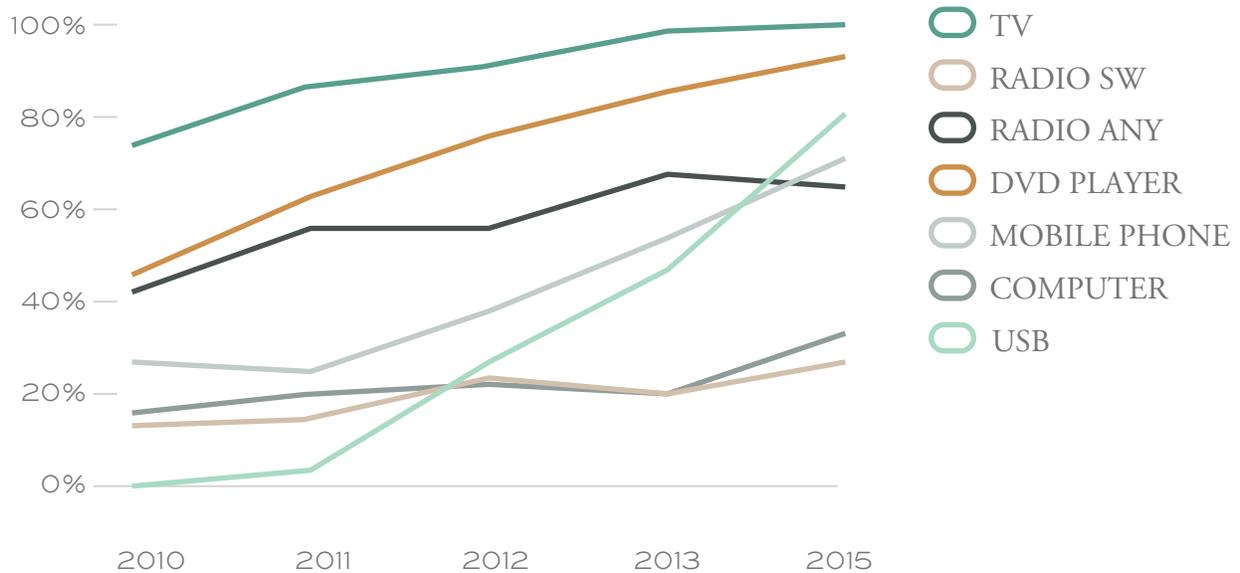


BBG Survey of North Korea Refugees, Defectors and Travelers (2015, N=350)

When we look at the changes in individual device access since 2010,[7] the rapid development of the media environment suggested by survey data collected since the previous version of this report was published is clear.

One interviewee succinctly chronicled some of the technological substitution that has occurred in the way North Koreans consume foreign media such as South Korean films and soap operas.

*I watched a lot of South Korean dramas and movies at my friends' houses since 2003. I watched them through various methods such as tapes, CDs, USB, SD cards, etc. I particularly liked the USBs because you could insert it into a DVD player and connect it to a TV to watch it on a large screen. USBs are also convenient for sharing movies with friends because they have a large memory [capacity]. If a USB version comes out, we rarely bought the CD and we just shared the movies amongst friends. After buying a cell phone, my friend would put the movies into SD cards and I would watch them alone at night.*

*- Female, 25, Hamkyongbukdo, Service worker at the Hoeryong City Services Facilities, Left NK 2013*

While not all segments of North Korean society were able to acquire the most advanced media devices, for most citizens, devices that would allow them to consume some form of foreign media were within reach.

*Most farmers at least have a TV, a Notel, and recorder at home. Many of them also buy the small Chinese-made, 12-volt TVs as well. Due to lack of electricity, a lot of people use the 250 Chinese yuan solar battery charger. Despite intensive crackdowns, people continue to watch South Korean and Chinese movies.*

*- Male, 46, Hamkyongbukdo, Manager at a collective farm, Left NK 2015*

# traditional Broadcast Media

## television

Nearly every respondent in the survey had access to a TV. Unlike in the case of radio, in which most respondents who listen to the radio at all listen to foreign broadcasts, a substantial number of North Koreans watch state television broadcasts and do not access foreign broadcast content via their TVs. Nearly nine in 10 survey respondents (87 percent) watched television on a weekly basis. The most watched single broadcast is North Korean Central Broadcasting, likely due to its wide national availability. Two-thirds of respondents (66 percent) watched the broadcast on at least a weekly basis. Along with a variety of ideologically-infused meetings North Koreans are expected to attend, and printed materials such as the Worker's Daily Newspaper (Nodong Shinmun), state television broadcasts are one of the most important messaging and propaganda outlets for North Korean authorities.

Beyond widely viewed legal domestic TV broadcasts, some North Koreans are able to watch foreign broadcasts through their televisions. Approximately one-third (34 percent) of respondents reported watching foreign TV directly either from China or South Korea. As with all forms of foreign media, even when the device used to access foreign content was legal, precautions had to be taken to ensure safety.

*You rarely get caught if you fix the channel to Korean Central Television (KCTV) and use a hidden remote control to change the channels. I also habitually turn on the North Korean news channel, but there is nothing to watch since there is no new information and I think most of it is a lie.*

*- Male, 59, Pyonganbukdo, Pyonganbukdo People's Committee affiliated Trading company, Left NK 2013*

*South Korean broadcasting is receivable in the Nampo region...The channels were fixed to the North Korean Central Broadcasting channel to prevent people from watching South Korean TV. Therefore, there were many instances where people owned two to three TVs. They would display the TV with the fixed channels and watch South Korean TV with the other one. I also occasionally watched South Korean TV at night.*

*- Male, 40, Nampo, City People's Committee, Left NK 2014*

It is generally understood that foreign broadcast TV availability is geographically limited within North Korea. Broadcasts originating from the Korean minority area of China, including Korean-language Yanji TV, are commonly viewed by those within broadcast range.

Similarly, those living in the southern provinces of North Korea are often able to view South Korean broadcasts such as KBS and MBC. However, even beyond the normal North Korean controls on watching foreign TV, there are several technical reasons why direct viewing of South Korean broadcasts would initially seem improbable. South Korea, in 2012,[8] converted from analog to digital television broadcasts and South Korea broadcasts in NTSC format, while North Korea (similar to China) broadcasts in PAL. Yet, 64 percent of respondents who viewed foreign TV directly reported making no modifications to their television sets.

Furthermore, as Figure 4 indicates, the provincial distribution of direct foreign TV-viewers appears to be far more broadly dispersed than was previously observed. Respondents from nearly every province reported viewing foreign television broadcasts directly. This marks a departure from earlier studies when only residents of provinces bordering China or South Korea reported directly viewing television broadcasts. It was reported that analog television broadcasts from South Korea were continued even after the change to digital with North Korean audiences in mind.[9] There has been speculation that the analog broadcasts that have been preserved have been changed to PAL, which would make them much simpler for most North Koreans to view without special equipment such as a multi-standard TV set.

New technologies such as Notels or EVD players with television receivers are also impacting the way in which North Koreans tune into foreign television.

*You can watch TV [by using EVD video player], but, there, no one would use an EVD to watch North Korean TV programs. They would watch Chinese TV programs or CDs. At the time of my defection in September of 2014, [the government] ordered people to register EVD and fix their channels.*

*- Male, 36, Yanggangdo, College Student, Left NK 2014*

In terms of content, it is worth noting that North Koreans who watch foreign broadcast television are not viewing content specifically produced with North Korean audiences in mind. Unlike foreign radio broadcasts, which are commonly targeted at audiences in North Korea, South Korean and Korean-language Chinese television broadcasts are targeted at domestic audiences in those countries. The impact on content suitability and perceived trustworthiness for television programming among North Korean audiences has not been extensively researched.

## FIGURE 4: DIRECT FOREIGN TV VIEWING BY PROVINCE

| | |
|---|---|
| Jagangdo | 0% |
| Hamkyongbukdo | 38% |
| Hamkyongnamdo | 7% |
| Hwanghaebukdo | 45% |
| Hwanghaenamdo | 75% |
| Kangwondo | 60% |
| Pyonganbukdo | 54% |
| Pyongannamdo | 9% |
| Pyongyang | 13% |
| Yanggangdo | 51% |

BBG Survey of North Korea Refugees, Defectors and Travelers (2015, N=350)

## RADIO

This report will generally characterize North Korea's information and media environment as a quickly evolving space in which its citizens are acquiring increasingly technologically advanced media devices and adopting new, more modern media consumption patterns. However, in some respects, the default public characterization of North Korea as anachronistic is born out. Shortwave and AM foreign radio broadcasts remain vital features of the North Korean information environment, especially when viewed from an ecosystem perspective, wherein radio functions as a directly accessible source of otherwise unavailable content. For all the ways in which North Koreans can now acquire, share and consume outside media content, foreign radio broadcasts remain the only source of nationally available, real-time, targeted news content available inside North Korea.

When the vast majority of North Koreans have seen compelling, extremely well-produced South Korean films and dramas, scratchy shortwave and AM radio leave much to be desired in terms of audience experience. Yet, unlike more widely consumed recorded media such as dramas and movies, radio is live and new programming is aired daily. While the content of foreign radio broadcasts can be diverse, much of what is aired is domestic and international news coverage.

Even if, as the findings in the previous section suggest, broadcast television from South Korea is more widely receivable than was previously the case, shortwave radio, due to the nature of the broadcasts, is available throughout the entire country. And while North Korean authorities do engage in jamming, most reports suggest they can do so only selectively.[10] They are unable to mount sustained, resource-intensive jamming efforts in response to the wide range of foreign broadcasts targeting North Korean audiences.

Unique among all sources of foreign media in North Korea, radio broadcasts are the only major sources of content produced with North Korean audiences in mind. A number of U.S.-sponsored broadcasts, South Korea-based NGO broadcasts, religious broadcasts and others produce hours of content specifically targeted to North Korean listeners daily. While qualitative research suggests that creating content that resonates with North Korean audiences can be difficult, for those in North Korea seeking to learn more about the outside, or get news about their own country that is not reported in the domestic media, foreign radio is likely their best and often their only option.

*I listened to a made-in-China semiconductor radio from 1999 to 2013. It was necessary for me to listen to the radio every day to hear the weather forecast so I can go out on the boat. I listened to KBS Korean People Broadcasting, Voice of America, and Radio Free Asia. Almost every night at 8 p.m., I would turn on KBS. I recall Radio Free Asia airing only after 10 p.m. I usually listened to the news. I listened a lot.*

*- Male, 59, Pyonganbukdo, Pyonganbukdo People's Committee affiliated Trading company, Left NK 2013*

Radio represents a key conduit for information back into North Korea.

*I would listen to KBS and Radio Free Asia beginning at 11 p.m. and the most memorable thing is the lilting voice. One of the most memorable broadcasts was the one that featured a man who lived in the Mangyongdae District of Pyongyang. He identified his name, said hello to his parents and relayed a message to them saying that he has settled in South Korea and was living well. He didn't particu larly criticize North Korea but I could feel his sincerity when he would say, "We will meet one day when Korea is unified. I will work hard to earn money and wait for the day when I could finally meet my parents." It was from this broadcast I first learned about people going to South Korea.*

*- Female, 46, Yanggangdo, Provincial Post and Telecommunications Office employee, Left NK 2013*

Twenty-nine percent of respondents reported listening to foreign radio in North Korea. While some substitution may be occurring as new forms of media become more widely available, the number of radio listeners have remained largely stable across years.

While the overall reach of foreign radio is steady, listening patterns appear to have shifted, becoming somewhat more consistent with those generally observed in other countries, with some devoted daily listeners, a large proportion of weekly listeners and a substantial remainder of the listening population that tunes in monthly and less frequently. This represents a departure from a previously observed pattern of foreign radio listening in North Korea in which those who risked listening to radio, by and large, listened with great frequency.

## FIGURE 5: FOREIGN RADIO LISTENING FREQUENCY

| | |
|---|---|
| Daily | 14% |
| Weekly | 46% |
| Monthly | 33% |
| Less frequently | 8% |

BBG Survey of North Korean Refugees, Defectors and Travelers (2015, N=350); Base: n=103 foreign radio listeners

As the media environment has continued to evolve, BBG survey results now consistently find that a majority of radio listeners tuned into foreign stations. This likely has been driven at least as much by declines in sanctioned, domestic radio listening as by incremental growth in foreign radio listening. One potential result of this phenomenon may be the increased sensitization of radio listening behavior or radio ownership generally. The assumption on the part of security personnel is that anyone with a radio, particularly an illegal free-tuning radio, which allows for tuning to any station rather than a radio with dials that are fixed on approved stations, is accessing politically sensitive broadcasts. Such an assumption does not seem to be unfounded as all but one respondent who owned a radio that was likely to have been shortwave-capable reported listening to foreign broadcasts. While nearly all respondents who reported owning a free-tuning radio listened to foreign broadcasts, a majority of foreign radio listeners still tuned in by modifying fixed channel radios. This lends further support to the notion that radios themselves are seen increasingly as sensitive items. Only four foreign radio listeners did not personally own a radio, implying that radios used to listen to foreign broadcasts are not widely shared.

Unsurprisingly, free-tuning radios were primarily acquired through the black market or other illegal means. Those whose free-tuning radios were bought legally only became tunable after later alterations.

## FIGURE 6: HOW DID YOU OBTAIN A FREE-TUNING RADIO?

| | |
|---|---|
| Bought from black market | 47% |
| Bought from a Chinese merchant | 23% |
| A gift from a friend or relative in a foreign country | 15% |
| A gift from a friend or relative in North Korea | 11% |
| Bought from official store | 4% |

BBG Survey of North Korean Refugees, Defectors and Travelers (2015, N=350); Base: n=47 free-tuning radio owners

More than consumers of other forms of foreign media such as broadcast television, or South Korean films and dramas, foreign radio listeners demonstrate strong demographic tendencies. Listeners are likely to be male and middle-aged (35-54). In the 2015 BBG survey, 42 percent of men reported listening to foreign radio compared with just 23 percent of females.

In fact, regression analysis indicates that when controlling for other factors, female respondents were only 15 percent as likely as men to be foreign radio listeners.

## FIGURE 7: FOREIGN RADIO LISTENERS BY AGE GROUP

| Age Group | Percentage |
|-----------|-----------|
| 15-24 | 2% |
| 25-34 | 17% |
| 35-44 | 41% |
| 45-54 | 35% |
| 55-64 | 6% |
| 65+ | 0% |
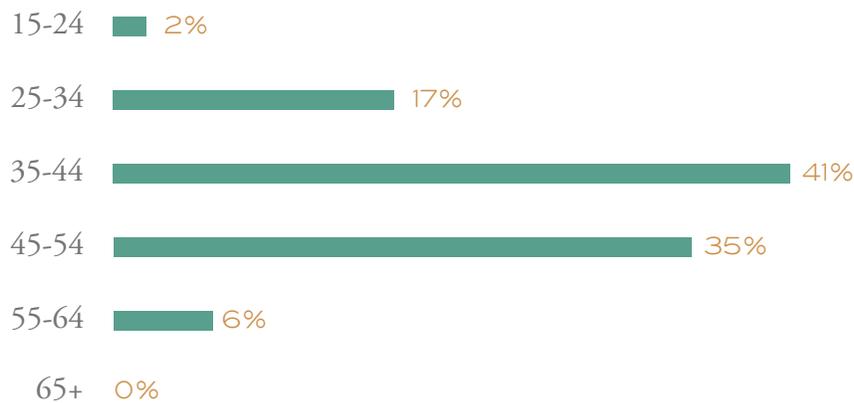
BBG Survey of North Korea Refugees, Defectors and Travelers (2015, N=350)

*It seems as though those people who had connections to South Korea, persons interested in politics, or intellectuals were the ones listened to the radio. The party secretary's wife was my friend, and we knew that we each listened to the radio.*

*- Female, 57, Hamkyongbukdo, Industrial chemist, Left NK 2013.*

Nearly all North Koreans are aware of the existence of radio broadcasts produced by South Korea, the U.S. and other foreign countries that are receivable in North Korea. Disparaging references to such broadcasts are occasionally made in official North Korea media. However, when it comes to specific foreign radio broadcasts most listeners appear to discover them either by simply tuning the dial in search of clearly receivable Korean-language content or from other people, including family, friends and business partners.

## FIGURE 8: HOW DID YOU LEARN ABOUT THE FOREIGN RADIO BROADCASTS YOU LISTENED TO?
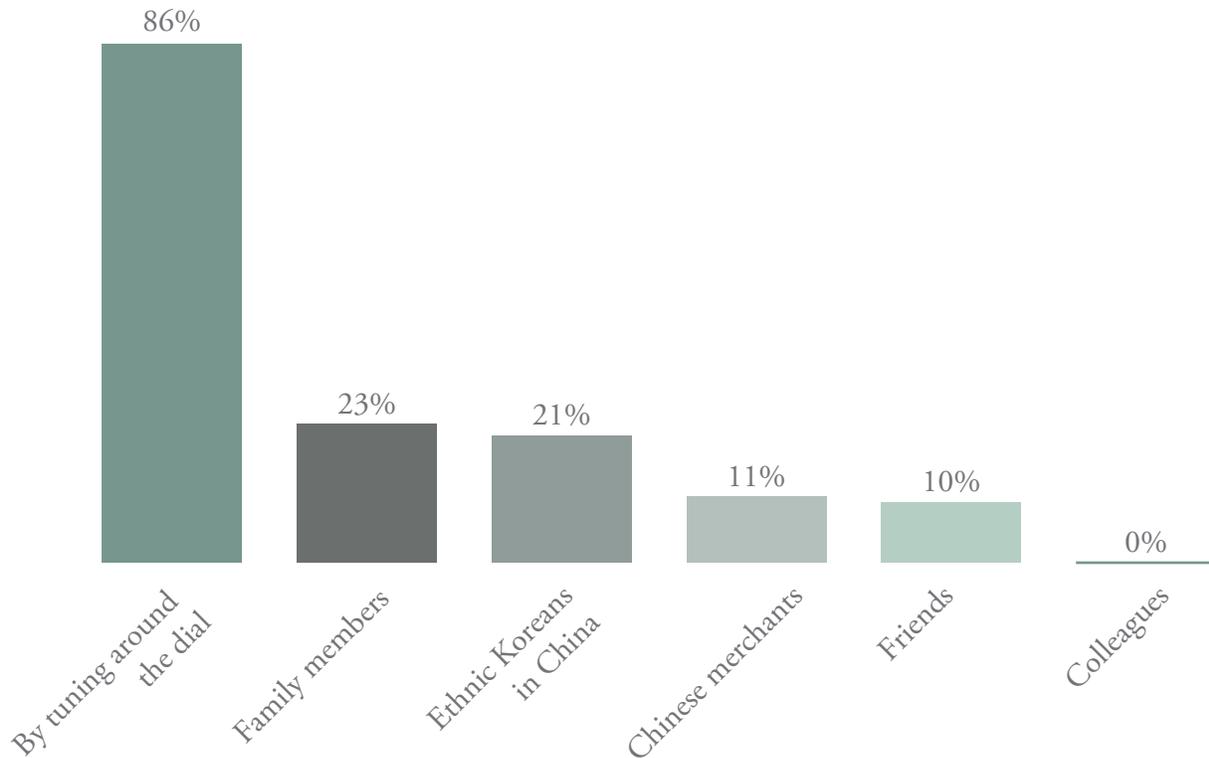


BBG Survey of North Korean Refugees, Defectors and Travelers (2015, N=350);
Base: n=103 foreign radio listeners

While qualitative research does confirm the existence of very sophisticated foreign radio consumers who tune in at specific times and frequencies to hear specific programming, it appears that the majority of foreign radio listeners are not purposeful about content selection.

This is also reflected in the very high proportion of overlap in audiences among leading foreign broadcasts. For instance, a majority of Voice of America listeners also listened to Radio Free Asia and KBS Hanminjok. Qualitative findings do suggest regular radio listeners do differentiate between the broadcasts, and express a variety of preferences and levels of perceived trust among foreign radio broadcasts. However, relatively few listeners appear to tune into one station exclusively.

A question asked annually in BBG Refugee, Defector and Traveler surveys is concerned with listeners' responses to content they found uninteresting on foreign radio. That most foreign radio listeners kept listening to the radio, but changed stations in the hopes of finding something more interesting, reveals they do have content preferences they attempt to exercise as they listen to foreign broadcasts. It also suggests an expectation that there will be multiple options available to tune into at a given time.

When foreign radio listeners were asked about the kinds of content that motivates them to risk listening to foreign radio, the majority of respondents characterized their primary reason as a desire to learn more about the outside world. This was followed by a desire to get information they could use in their daily lives, which qualitative research has suggested is generally information such as weather reports, current events that could produce potential future supply shocks and any other news that could have direct relevance to trading or market conditions in North Korea. A similar proportion was motivated to listen by a desire to learn more about North Korea and its leaders.

These results map relatively well to the types of content foreign radio supplies. Perhaps unsurprisingly, foreign radio broadcasts are able to consistently supply quality international reporting that is otherwise unavailable in North Korea. Reports on domestic news in North Korea can be difficult to produce as North Korea presents a very difficult reporting challenge, and inaccurate reports that audiences in the country can observe to be false can undermine station credibility. That said, when domestic reports are salient, accurate and the information they provide is unique, they are often shared widely through word-of-mouth networks.

While reports of news that can impact market participants' business activities are highly in demand, general or theoretical business or economics reporting is somewhat less popular. Perhaps a reflection of the medium's sensitivity or the availability of well-produced entertainment content such as South Korean or Chinese films and dramas, few radio listeners cited "entertainment" as the primary reason they listen to foreign radio.

## FIGURE 9: WHEN YOU HEARD SOMETHING UNINTERESTING ON FOREIGN RADIO DID YOU?
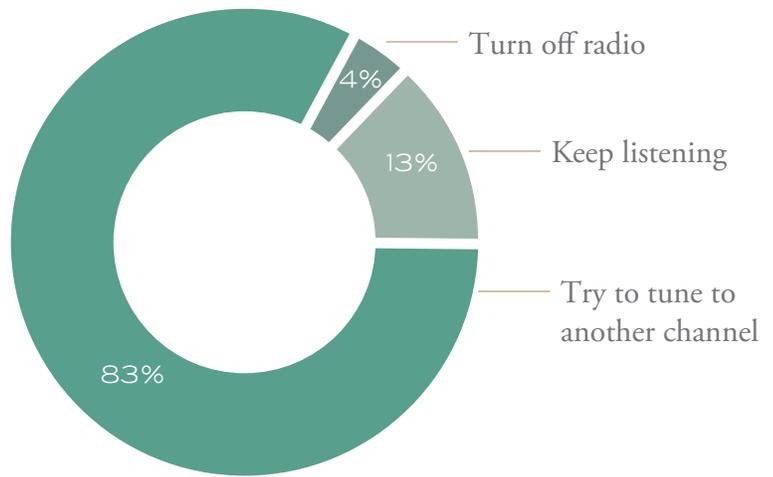


- Turn off radio — 4%
- Keep listening — 13%
- Try to tune to another channel — 83%

BBG Survey of North Korean Refugees, Defectors and Travelers (2015, N=350); Base: n=103 foreign radio listeners

## Figure 10: Primary reason you listen to foreign radio?

| | |
|---|---|
| 61% | To learn news about the outside world |
| 13% | For information I can use in my everyday life |
| 13% | To learn about North Korea/its leaders |
| 5% | For entertainment |
| 4% | For general information about economics/business |
| 4% | To escape/leave North Korea |

BBG Survey of North Korean Refugees, Defectors and Travelers (2015, N=350); Base: n=103 foreign radio listeners

*My uncle also carried a small radio. He often talked about interesting matters such as world affairs.*

*- Female, 20, Hamkyongbukdo, Candy maker, Left NK 2013*

Generally, about one-third of radio listeners claimed they share information they hear on foreign radio with others they trust. As this information is likely passed on further by those who first hear it directly, for salient reports, there is likely a larger secondary audience for information broadcast via radio than the primary listening audience that actually tunes in.

As a unique source of news and information, radio fuels communications from business-oriented, word-of-mouth networks to casual chats with close friends.

*I talked a lot about the state of affairs and problems about life in general with friends over drinks. One time, we discussed the combat power of the United States. In North Korea, people generally do not highly appraise the military power of the United States. I think it is because North Korea propagandizes that U.S. military strength is weaker than North Korea. At the time, I said that U.S. military strength was more powerful. When I was in the army, I thought the North Korean fighter plane was good. However, I heard on the radio that the capability of the U.S. F16 plane and the North Korean MiG 21 plane is 50 to one.*

*- Male, 39, Jagangdo, Repairman at No. 38 factory, Left NK 2013*

Foreign radio listening behavior remains, quite understandably, highly influenced by the fear of detection and punishment. Nearly every respondent was aware of the illegality of listening to foreign radio, and among those who did listen, safety was the primary determinant of when they chose to tune in. There is likely a natural confluence between the safest times to listen and those times when the most channels were available, both most likely occurring during late night or very early morning hours.

## FIGURE 11: How did you choose the times you listened to foreign radio?
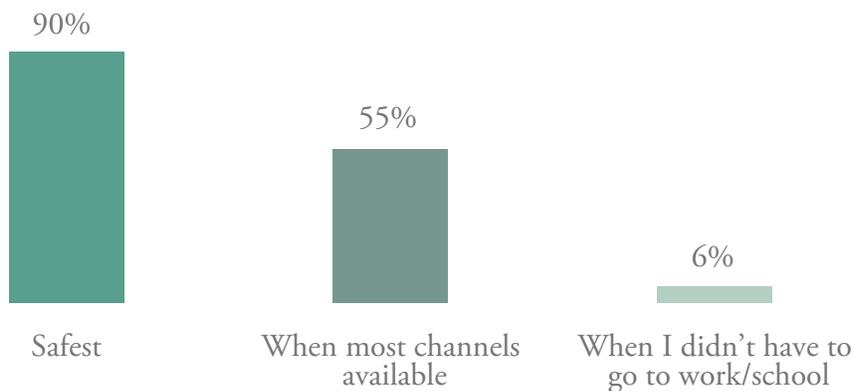


90% Safest

55% When most channels available

6% When I didn't have to go to work/school

BBG Survey of North Korean Refugees, Defectors and Travelers
(2015, N=350); Base: n=103 foreign radio listeners

The risk associated with accessing foreign radio broadcasts only seems to be increasing in the Kim Jong Un era. Reinforcing broad evidence of sustained foreign media crackdowns in recent years, not a single foreign radio listener believed punishments for foreign radio listening had lightened since Kim Jong Un assumed power. Instead, over three-quarters believed punishments for those caught listening had grown harsher.

## Figure 12: Since Kim Jong Un came to power are punishments for listening to foreign radio more or less severe?
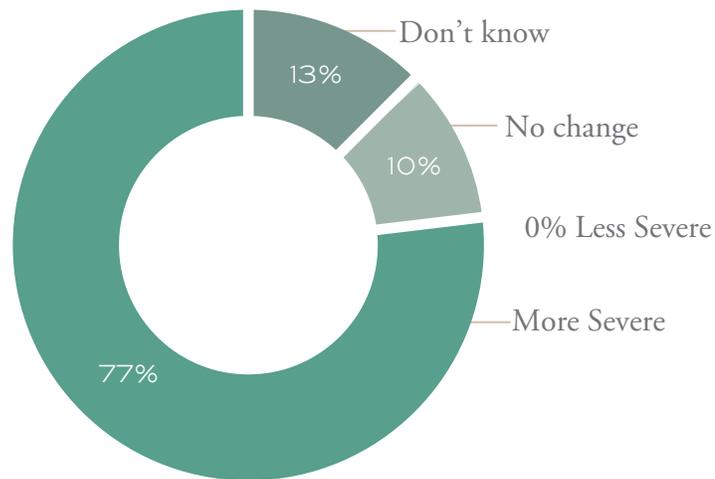


13% — Don't know
10% — No change
0% Less Severe
More Severe
77%

BBG Survey of North Korean Refugees, Defectors and Travelers
(2015, N=350); Base: n=103 foreign radio listeners

In sum, although foreign radio is far from a mass medium, it continues to serve an important function in the information environment even as more advanced digital devices enter the market.

Despite its true complexity, the information space in North Korea has long been characterized simplistically as a battleground. North Korean citizens seek out foreign media for reasons ranging from business advantage to psychological comfort to curiosity about the outside world, while the government tries to stem foreign media inflow and reestablish its control over what information its citizens can access. Consistent with the public perception of North Korea generally, competition for audience and influence among the North Korean people was understood to be an anachronistic battle fought in large part with tools of a cold war vintage – shortwave radio and terrestrial television. This is no longer the case. For well over a decade, digital media and communications devices, and recorded digital content have flowed steadily across the border with China and spread throughout the country. Digital media is being consumed by nearly every segment of North Korean society from the top elites in Pyongyang to farmers in North Korea's inland areas.

*Cultural life consisted of watching South Korean and Chinese movies at home. If a friend brought over a CD, we would watch together over drinks. After 2010, I would watch South Korean and Chinese movies once or twice a month by using a USB and sticking it into a Notel. I would watch North Korean movies only when I had nothing else to watch.*

*- Male, 44, Yanggangdo, Smuggler, Left NK 2014*

Although the sophistication of the devices represents a technological leap forward, the spread of digital media in North Korea has been decidedly low-tech. Absent the internet or cellular data services, most digital media is passed physically from person to person, borrowed and copied from friends or purchased in informal markets. While this initially limited the speed and scope of its spread, person-to-person sharing constitutes an incredibly difficult phenomenon for North Korean authorities to control, as there is no way to centrally address the problem.

The reach and diversification of digital media available in North Korea continues to increase as North Koreans upgrade technologies to update the way they consume familiar content and gain access to new kinds of content entirely. At the same time, however, increasing digitization provides the state with new tools to block and censor its citizens' attempts to access unsanctioned content.

## CONTENT

When *A Quiet Opening* was released in 2012, the most common means of accessing foreign media was through DVDs. They primarily contained South Korean, Chinese and other international films and TV dramas. Although the means of access have evolved, entertainment media from South Korea, China and elsewhere remain the most widely consumed forms of outside media in North Korea. The reasons for the popularity of these films and dramas are numerous and easy to understand. While North Korea offers little in the way of entertainment media beyond relatively poorly produced and unfailingly didactic films and dramas, South Korean and Chinese movies and soaps are among the best produced and most popular titles in the world today.

There is ample evidence consuming foreign entertainment media has a meaningful effect on North Korean viewers. In addition to qualitative findings illustrating that foreign entertainment media can suggest alternate political and social realities, a series of structural equation models created for *A Quiet Opening* demonstrates a robust relationship between exposure to foreign entertainment media and positive beliefs and attitudes about the outside world.[11] While visible in largely innocuous forms, the influence of foreign entertainment media may be reflected in the evolution of basic social conventions.

*People's way of living has changed a bit from continuing to watch South Korean and Chinese dramas... Men now confess their affection to women. Instead of arranged marriages, the majority are marriages that result from dating. There are even cases where men go to the girlfriends' parents and say, "I will marry her."*

*- Male, 22, Hamkyongbukdo, Road construction worker, Left NK 2014*

Given North Koreans' natural desire for entertainment, distraction and some measure of curiosity about the outside world, it is little wonder that such content remains extremely popular. What has changed, however, is how the content is consumed. While DVD players are still an important interface for many, direct USB inputs on both traditional TV-connected DVD players and attached-screen notels, mean that most North Koreans have switched away from DVDs and instead are accessing foreign video content via micro-storage devices such as USB drives or SD cards.

## non-Networked Systems

As noted above, absent availability of the internet or cellular data, digital media in North Korea necessarily spread in a relatively low-tech, person-to-person manner. However, even without the network connections we take for granted in the rest of the world, North Koreans have found ingenious ways to link together the types of digital devices they do have to create non-networked systems that maximize their ability to consume and share digital content across platforms. DVD players and notels with direct USB inputs, televisions, SD cards and mobile phones can be strung together to give North Korean citizens numerous ways to share, view and conceal media.



## FIGURE 13: EXAMPLE OF A NON-NETWORKED SYSTEM

MICRO-SD TO USB CONVERTER
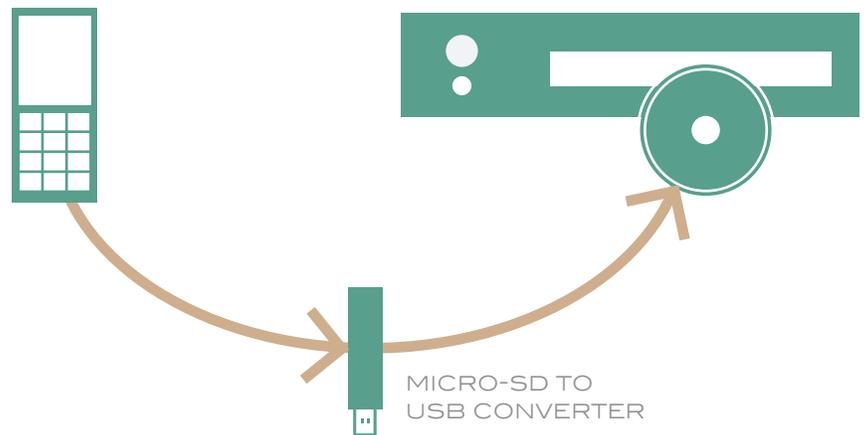
Often in repressive contexts, the flipside of a new technology's advantages constitutes its weaknesses, as greater connectedness often opens up new avenues for surveillance by determined regimes. The inverse may be true for the kinds of non-networked media consumption tools widely used in North Korea. While they can be relatively inconvenient, suboptimal means to share and consume media, they are also relatively difficult to censor and surveil. This is precisely because they are non-networked and non-updatable and, thus far, less susceptible to remote censorship and surveillance techniques.

## DEVICES

### DVD Players/Notels

Even as its popularity declines in the West, the DVD player, and its attached-screen cousin the notel (sometimes referred to as an EVD player) serves as a crucial, inexpensive, multi-purpose nexus for non-networked systems and digital media content consumption in North Korea. In the time since *A Quiet Opening* was published, use patterns around DVD players have evolved beyond simply playing DVDs. The devices have become the preferred interface for digital files.

Ninety-two percent of survey respondents had watched foreign content via a DVD player, meaning the devices are the primary way North Koreans consume foreign content by a wide margin.

Forty-eight percent of those with access to a DVD player used a notel with an attached screen. Notels have gained popularity as they boast multiple features that are well-suited to the North Korean environment. They are battery-powered and thus can be used when electricity is not available. Because the devices have their own screen, they don't need to be connected to a television, and their small size makes them easily transportable and concealable.

Eighty-six percent of those with access to DVD players used devices with direct USB inputs. This simple feature of the inexpensive Chinese-made DVD players available in North Korea has been among the most important contributing factors in the rise in popularity of USB flash drives. Prior to DVD players with USB inputs, only the small proportion of North Koreans who owned computers could make use of USB drives. After DVD players with USB inputs became more widely available, a much broader swath of the North Korean populace gained access to a USB-compatible digital interface. Notels almost universally feature USB ports.

> *Recently, there are also Notels where you can insert two USBs and make copies.*
>
> *- Female, 57, Hamkyongbukdo, Industrial chemist, Left NK 2013*

## MICRO-STORAGE DEVICES: USBS, SD CARDS

One relatively dramatic development since the publication of *A Quiet Opening* has been the movement toward a much greater use of micro-storage devices such as USB flash drives and SD or micro-SD cards.

## FIGURE 14: ACCESS TO USB DRIVES BY YEAR OF EXIT FROM NORTH KOREA



81%

50%

43%

29%

26%

2010    2011    2012    2013    2014
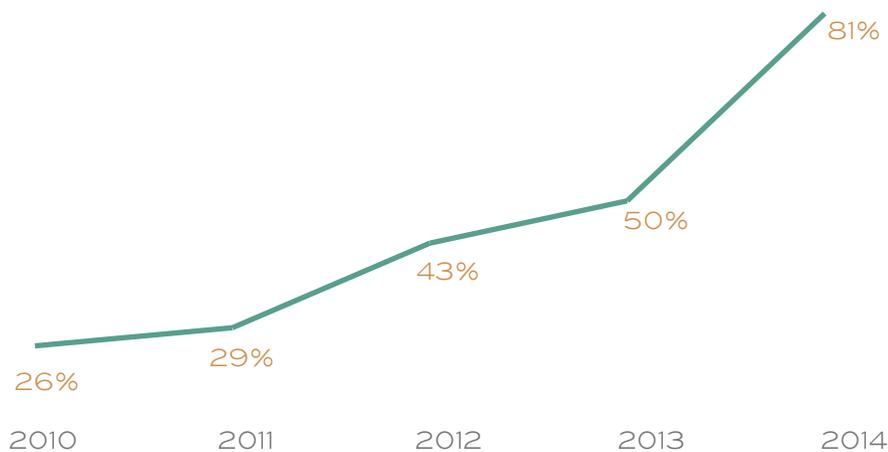
BBG Survey of North Korean Refugees, Defectors and Travelers (2015, N=350)

*I watched Chinese movies with CDs and USB by buying a DVD player. There were people who would lend or sell movies in a USB. For example, if you chose a Chinese drama from the list, they would lend you a USB with 30-40 episodes for 5,000 won.*

> *- Male, 29, Pyonganbukdo, Paper factory employee/83 worker, Left NK 2014*

These micro-storage devices have proven a good fit for North Koreans as they allow users to store a large quantity of digital files in a form that is both easy to hide when subject to physical inspection, and facilitates easy sharing and viewing.

While a very small minority of respondents used USB drives or SD cards simply to move files between their own devices, micro-storage devices were overwhelmingly used to share files with others. Ninety-one percent of those with access to a USB drive used their USB to share content with others. Similarly, 97 percent of those with access to an SD or micro-SD card shared contents with others.

As increased access to foreign media and information came part and parcel with greater horizontal social connectedness in the post-famine era, it is little wonder that foreign media became a key feature of shared non-state culture for many North Koreans.

Among the large majority of North Koreans who viewed foreign films and dramas, nearly all of them watched with trusted friends and family. Despite the activity's illegality, it has become an important and normalized shared behavior, inspiring a great deal of discussion, and in some cases, influencing prevailing social trends.

## FIGURE 15: WITH WHOM DID YOU WATCH CONTENT VIA A DVD PLAYER?
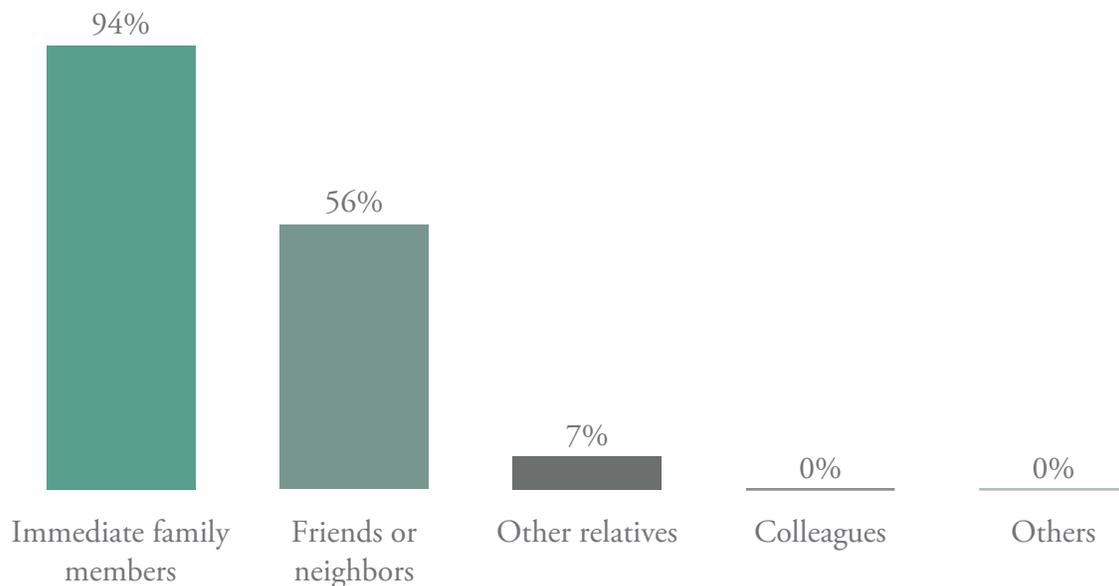


| Immediate family members | Friends or neighbors | Other relatives | Colleagues | Others |
|---|---|---|---|---|
| 94% | 56% | 7% | 0% | 0% |

BBG Survey of North Korean Refugees, Defectors and Travelers
(2015, N=350); Base: n=323 viewers of foreign DVDs

*Regardless of continued censorship of illegal pirated films, I still watched them. Recently, I have been watching them usually using a USB. I watch Hong Kong films with friends, but South Korean films only with family members. I have never directly acquired South Korean films myself and I only watched when relatives would bring them over. The most memorable Korean drama was "Empire of the Sun."*

*- Male, 22, Hamkyongbukdo, Student, Left NK 2015*

The desire to share media and, in particular, foreign media, with trusted social connections has persisted. North Koreans continue to share media both in person, and, as technology provided new means to do so, digitally.

## FIGURE 16: WITH WHOM DID YOU SHARE CONTENT WITH VIA USB?



BBG Survey of North Korean Refugees, Defectors and Travelers (2015, N=350);
Base: n=257 who shared content via USB

USB drives are not explicitly illegal in North Korea and there are sanctioned uses for the devices, such as moving files between work or school computers and home computers, that allow a person to own a USB drive and maintain plausible deniability that he or she is not doing anything illegal. However, the overwhelming majority of USB owners in the survey sample (98 percent) reported using their drives to store some form of illegal media.

## FIGURE 17: WHAT DID YOU STORE ON YOUR USB DRIVE?
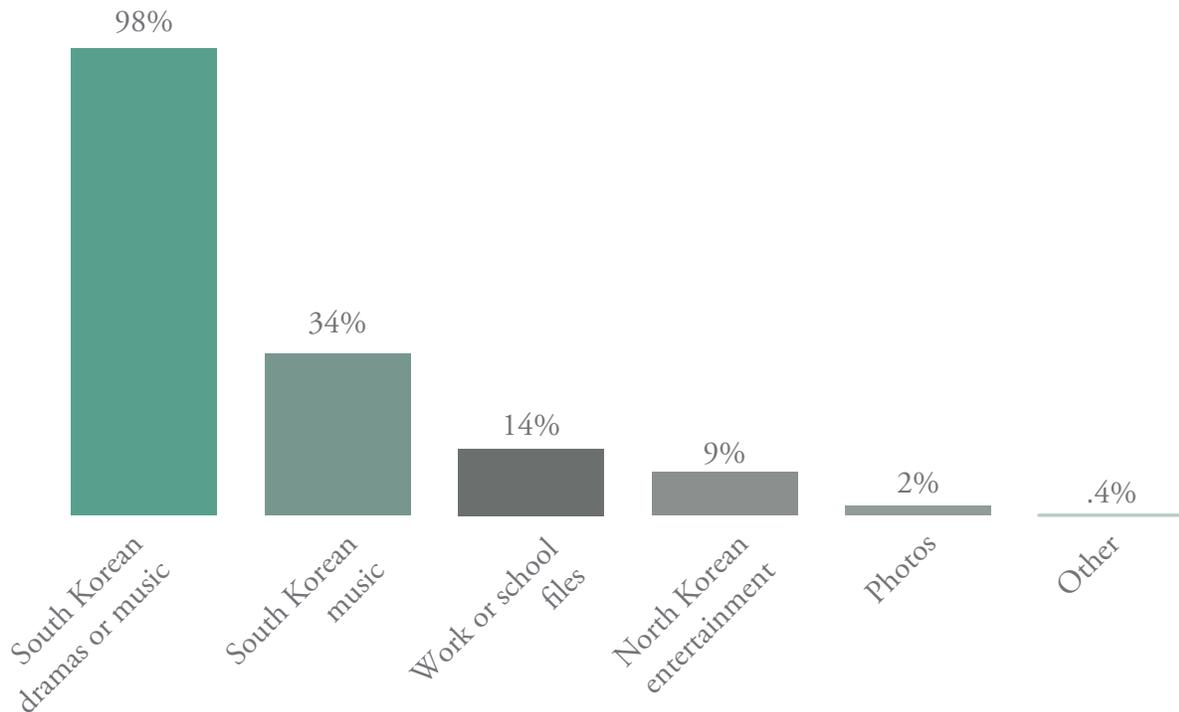


BBG Survey of North Korean Refugees, Defectors and Travelers (2015, N=350);
Base: n=283 who had access to a USB drive

*I used USB memory since I was a university student from 2003 to 2004. As the memory capacity grew, I used a USB with a memory of 32 gigabytes and also used an external hard drive. Because a USB and an external hard drive can be stored separately, it is useful in avoiding crackdowns.*

*- Male, 33, Pyongyang/Hwanghaebukdo, Computer programmer at KCC, Left NK 2013*

When respondents were asked how they accessed the contents of their micro-storage devices, the outlines of the type of non-networked systems common in North Korea became apparent. USBs are primarily accessed through DVD players and computers, while SD and micro-SD cards provide a link to mobile phones. Connections between contents on USB and SD/micro-SD cards can be facilitated through inexpensive SD-to-USB converters referred to as SD card readers.

Similar to USB drives, SD and micro-SD cards appear to be gaining popularity, at least, in part, due to their concealability.

*I usually kept South Korean songs and dramas that I listened to and watched on SD cards because it was dangerous. I never directly connected an SD card to a computer to store the files but my friends would do it for me. Wary that the censorship inspection units might come around, I would watch them under the covers alone so I didn't get caught. I did not carry the SD cards around and left them at home to only use under my blanket at night.*

*- Female, 25, Hamkyongbukdo, Service worker at the Hoeryong City Services Facilities, Left NK 2013*

## FIGURE 18: HOW DID YOU ACCESS THE CONTENT OF YOUR USB DRIVE?

94%    DVD player

22%    My own computer

9%     A family member's/friend's computer

2%     Computer in a public space

0%     Mobile phone

BBG Survey of North Korean Refugees, Defectors and Travelers (2015, N=350); Base: n=283 who had access to a USB drive

## FIGURE 19: HOW DID YOU ACCESS THE CONTENTS OF YOUR SD CARD?

63%    Through my domestic mobile phone

53%    Via DVD player

22%    Through my Chinese phone

19%    Via SD card reader

BBG Survey of North Korean Refugees, Defectors and Travelers (2015, N=350); Base: n=32 who had access to a SD/micro-SD card

In general, citizens have learned to mitigate the risk of being discovered with non-sanctioned materials by keeping their media players and their storage devices separate when they are not in use. Since many devices support the use of both micro-storage and CDs/DVDs, citizens can leave CDs/DVDs containing approved content in their devices when watching illicit content using micro-storage devices. This allows them to quickly dispose of the micro-storage devices during searches without raising the suspicion of security forces.

In addition to DVD players, micro-storage devices and mobile phones, in some cases, computers are used as part of a non-networked system. As is evident in the media device access chart, however, growth in personal computer ownership has been far less dramatic than the growth in some other kinds of digital media devices. Furthermore, only about two-thirds of those with access to personal computers have one in their homes. This implies that many who can access computers can only do so either at the homes of friends or family, or in public places like schools or their workplaces, where the kinds of activities they are likely to perform are more limited and less risky. There are several factors that have likely contributed to slower growth in computer access and ownership. Without the widespread availability of the internet or even intranet, computers are not significantly more useful than other devices, such as notels, which are more widely available, less expensive and less likely to be closely scrutinized by censors.

While laptops do appear to be quite popular among younger, educated elites, for most North Koreans, computers are simply a more expensive and potentially sensitive way to access films, dramas and songs via their USB drives.

North Korean authorities perceive the influx of foreign content in digital form as an ideological threat, and the widespread use of digital media devices such as USB drives and SD cards to access illegal media has drawn the attention of North Korean security forces. Public inspections of the media content contained on SD cards in citizens' mobile phones and inspections of other devices found during home raids have become a standard feature of security inspections. While the influx of digital media devices in recent years has given citizens new tools to access illegal content while avoiding detection, North Korean authorities are responding with far more concerted and technologically advanced efforts to stem the flow of illegal foreign media content.

# GOVERNMENT CONTROL OF MEDIA IN THE KIM JONG UN ERA

The Kim Jong Un era has been characterized by a sustained crackdown on non-sanctioned media, prominently featuring the efforts of specialized units and resulting in a marked resensitization of many forms of outside media content.

Since his ascension to the top leadership position, Kim Jong Un has introduced a number of cosmetic liberalizations particularly around dress and appearance. Interviewees associated many of these with Kim's own relative youth and his attempts to shore up the ideological grounding of North Korea's young people.

> *Of all the policies, the one that was best implemented was the one allowing women to wear luxury items. Women really liked this.*
>
> *- Male, 45, Hamkyongbukdo, Remittance broker, Left NK 2015*

> *Since the appearance of Lee Sol Ju, they no longer crack down on earrings, necklaces, and dresses. It seems as though an official policy related to this was developed. The government states in the lectures phrases such as "wear bright colors in the summer." However, people still cannot dye their hair red or yellow. There are jeans but there are no ripped jeans like the ones you can see in South Korea. It doesn't stand out too much if you wear black jeans instead of blue jeans. However, you still have to give a pack of cigarettes if you get caught wearing black jeans."*
>
> *- Female, 25, Yanggangdo, Kindergarten teacher, Left NK 2015*

However, despite a more cosmopolitan veneer, the general trend during the Kim Jong Un era has been a marked increase in social and economic controls.

> *Since Kim Jong Un, smuggling and border control has become stricter. Until 2011 or 2012, people could smuggle for about 20 days in a given month. But now people can only smuggle goods for only 10 days out of three months. Crackdowns have become that much more frequent. In the past the regime enforced restrictions temporarily when a policy was announced, now the border is basically shut down.*
>
> *-Male, 36, Yanggangdo, College student, Left NK 2014*

Restrictions on foreign media and unsanctioned information has been the particular focus of many of the recent crackdowns. Not a single survey respondent believed that it had become less dangerous to watch South Korean and other foreign dramas under Kim Jong Un, and the majority believed it had become more dangerous.

There is some evidence to suggest that increased content differentiation may be occurring in the way crackdowns on foreign media are conducted. South Korean films and dramas, in particular, are deemed more sensitive than Chinese content.

> *If caught watching Chinese movies, one can pay money to cover up the incident. On the other hand, there are many instances where watching South Korean movies or pornography can land one in a re-education prison because it is strictly forbidden.*
>
> *- Female, 49, Hamkyongbukdo, Housewife, Left NK 2014*

While a strong supporting trend has not emerged in the survey data, a number of qualitative interviewees reported scaling back their consumption of South Korean dramas and films in response to crackdowns that have intensified since 2012.

- 25% — Don't know
- 11% — No change
- 0% Less dangerous
- 64% — More dangerous

BBG Survey of North Korean Refugees, Defectors and Travelers (2015, N=350); Base: n=323 viewers of foreign DVDs

## BRIBERY

Since the late 1990s, bribery has been the grease for the gears of North Korea's ground-up marketization. The ability to bribe security personnel has also been an important factor in the spread of unsanctioned media. With little or no material incentive to report those caught accessing foreign media, many security personnel were content to take a small bribe to overlook offenses.

Bribery is an anticipated cost of business in North Korea. Especially for non-political crimes, there is a clear expectation that those in positions of authority will take money to look the other way.

> *Because business is an anti-socialist act, anything related to it is up for crackdown. Anyway, once someone is busted, there is a way to get out of it through bribery. Since even the judges now understand business is the only means for survival, they let things go after receiving money.*
>
> *- Female, 45, Yanggangdo, Wholesaler, Left NK 2014*

Fifty-three percent of survey respondents reported they personally paid a bribe to avoid punishment. Bribes were paid to nearly every type of person with the authority to report illegal behaviors.
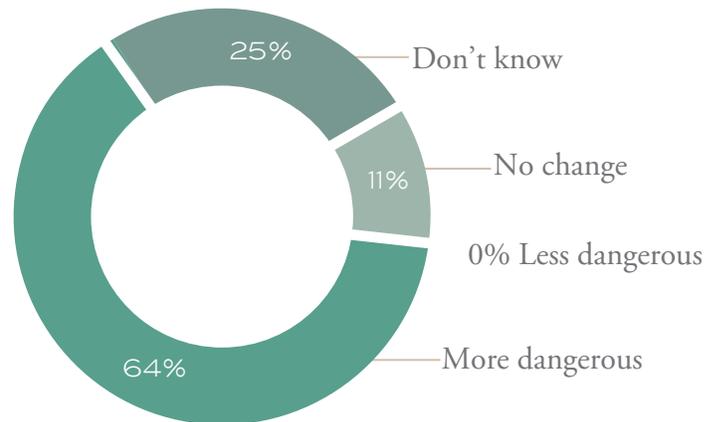
While bribery remains a well-entrenched feature of the Kim Jong Un era, as a result of the government drive to crack down on certain illegal behaviors such as outside media consumption, it appears as though there are now more cases in which a bribe is not taken or the amount of the bribe necessary to overlook an infraction has increased substantially.

## FIGURE 21: WHO DID YOU BRIBE TO AVOID PUNISHMENT?

| | |
|---|---|
| State security officer | 82% |
| Police | 61% |
| Military personnel | 57% |
| Inminban[12] | 5% |

BBG Survey of North Korean Refugees, Defectors and Travelers (2015, N=350); Base: n=184 who paid a bribe to avoid punishment

*I knew South Korean and American movies were dangerous but I think my curiosity was greater [than my fear]. I thought that in the neighborhood if I was caught watching movies, I could get away with it by paying money, so I continued to watch. But if the central party or others conducted the crackdown, I didn't watch anything during that time since it was dangerous.*

*- Female, 25, Hamkyongbukdo, Service worker at the Hoeryong City Services Facilities, Left NK 2013*

# THE BUREAUCRATIC SPECIALIZATION OF MEDIA CONTROL

In response to the dramatic post-famine rise in unsanctioned activities by citizens and the susceptibility of the traditional security bureaucracy to bribery, North Korean authorities have created a number of special units that draw on personnel across multiple security agencies and are tasked with combating specific illegal behaviors. The following "gruppas," as they are called in North Korea, merit mention as they are directly related to policing illicit media and communications.

Since the late 2000s, North Korea focused media and open source academic studies based on defector interview data have made references to multiple groups (sangmu or gruppas) tasked with crackdowns on the sale and usage of foreign media content and devices, drugs and illegal border trade.[13] News outlets and scholars have identified at least a half dozen supernumerary groups involved in crackdowns. However, two in particular are commonly cited in reference to crackdowns on media and communications: Group 109 and Group 118.[14] These groups are part of a drive to combat "non-socialist phenomena," which editorials and essays by North Korean state media characterize as, "US imperialists … viciously maneuvering to force, on a large scale, small radios, inappropriate recorded video tapes, publications, and others [into our country] for the purpose of destroying our single-hearted unity and disintegrating and deteriorating our inside."[15]

The specific legal missions of these two prominent groups are somewhat amorphous because their tasks involve a wide variety of "non-socialist" private behavior and transactions. But available information suggests they are tasked to enforce Articles 193 through 195 of the DPRK Criminal Code. Article 193 deals with the "crime of bringing in and spreading decadent culture" and prohibits a DPRK citizen "without authorization to bring in from other countries

or makes or spreads music, dances, paintings, photographs, books, videos, or memory media such as CD-ROMs[16] reflecting decadence, sexuality, and obscenity."[17] Article 194 deals with "committing acts of decadent culture" and prohibits "acts of seeing or listening to music, dances, paintings, photographs, books, videos, or memory media such as CD-ROMs reflecting decadence, sexuality, and obscenity in content."[18] Additionally, article 195[19] concerns "the crime of listening to hostile broadcasts, or collecting, keeping and spreading printed matters or objects of allurement" and prosecutes "whomever, without anti-state purposes, listens systematically to anti-DPRK broadcasts or collects, keeps, or spreads handbills, photographs, videos, printed matters of objects of allurement." Interestingly there are no provisions in DPRK statutes about those who engage in the same activity with "anti-state purposes," although these activities could be included in statutes against subversion.[20]

## GROUP 118

Of the two groups, less information is available about Group 118. It was initially established to stop the trade and use of illegal drugs (primarily methamphetamine and opiates). It has been active primarily in North Hamkyong Province, specifically Hoeryong and Chongjin, which could mean that it was specifically established for that province. Despite its primary mission to enforce drug bans, Group 118 is also reported to be involved in the inspection of computer content. It conducts random inspections of computers in DPRK residences, workplaces and educational institutions. Their searches extend to computer discs (USB and CD-ROM), portable data storage devices and cell phones. With regard to cell phones, Group 118 also is believed to monitor for Chinese cell phones. Group 118 is reportedly comprised of officers from the State Security Department (SSD) and Ministry of People's Security (MPS).[21]

## GROUP 109

Likely established in the early 2000s, Group 109 is by far the most commonly referenced group when recent defectors speak of crackdowns on media. Group 109's mission is to inspect and confiscate a variety of goods and items manufactured or produced in foreign countries, and detain, interrogate and refer for prosecution those North Korean citizens who possess and/or distribute these items and goods. It is focused on ideological infractions particularly via use of computers, cell phones, USBs, CD-ROMs, VCDs and DVDs containing banned films, television series, MP3s or other files.[22] Group 109 reportedly pays particular attention to the file histories on devices, looks for file transfers between devices and from portable data storage to other devices, and checks radios and televisions for channel/frequency locks. In some accounts about its activities, Group 109 appears to have been tasked to look for Chinese cell phones and other illicit technologies.

Group 109 teams have been formed in Pyongyang and in provincial capital cities. There is evidence they have branched out into counties and smaller cities. A Group 109 team consists of members of the People's Committee, the SSD, the MPS, the Central Prosecutor's Office and includes members of reserve military training units and workers and social organizations.[23]

*Group 109 is in charge of cracking down on impure video recordings, Chinese cell phones, satellite antennas, radios, etc. They usually use the method of ransacking residences at random hours. They also crack down on cell phones on the streets. Once caught, based on the gravity of the offense, they would decide on the level of punishment ranging from a self-criticism letter to [sending someone to a] labor camp or re-education center.*

*- Male, 29, Pyonganbukdo, Paper factory employee/83 worker, Left NK 2014*

Group 109 and other similar units represent a move toward greater specialization of human surveillance and control. Presumably, the belief is that smaller, more professional forces with narrow mandates will be able to more effectively crack down on specific illicit behaviors than will the traditional security bureaucracy, which is less motivated and, in effect, relies on neighbors reporting on one another.

When discussing topics related to foreign media, qualitative interviewees often brought up the group by name. The impact the group has had on the perceived sensitivity and risk associated with foreign media consumption is apparent.[24]

*From the early 2000s, I watched a lot of South Korean movies. Before the start of crackdowns by the 109 Group, people would leave the doors open and gather to watch movies together.*

*- Female, 57, Hamkyongbukdo, Industrial chemist, Left NK 2013*

*Even though it was not a special crackdown period, the 109 Group could come out and conduct a crackdown at any time.*

*- Female, 25, Yanggangdo, Kindergarten teacher, Left NK 2015*

While far from being insusceptible to bribes, Group 109 did require larger bribes from those caught accessing unsanctioned media, and their mandate drove them to look closely for any signs of ideological corruption.[25] One interviewee recounted running afoul of the group after they noticed the use of South Korean style language in text messages she had sent.

*Since Group 109 has become more active in its operations, they conduct crackdowns more often. In 2013, the Group randomly raided my home and confiscated a cell phone and a laptop. At the time, there was a text on my daughter's phone that had phrases that were deemed "South Korean-styled," which served as a pretext for confiscation. I made a call to a section chief of the State Security Department that I knew and paid RMB 100 to get all the confiscated items back.*

*- Female, 49, Hamkyongbukdo, Housewife, Left NK 2014*

As many interviewees were quick to note, it is next to impossible to survive in North Korea without engaging in some form of legally ambiguous activity. As a result, it seems that some of the heightened crackdowns during the Kim Jong Un era, particularly those of an economic or non-political nature, have caused some explicit friction between the targets of crackdowns and the security personnel in charge of carrying them out.

*I heard that Kim Jong Un said that he would "put wings on the State Security Department." And in reality, the authority of the security department has strengthened. Before, only the guard post was able to walk along the Amnokgang embankment, but now the SSD can go up there as well. Previously, the SSD did not have much connection to the daily lives of people. For example, if a person was caught by the SSD for bringing back smuggled goods, people would resist by saying, "Why don't you go find a spy?" Or, "Go catch the North Korean defectors." However, the SSD now even confiscates smuggled products.*

*- Male, 45, Yanggangdo, Doctor/Professor, Left NK 2014*

*People's perceptions have changed and people are not as intimidated by judicial authority so they are more outspoken. For example, if the SSD pays a visit to the parents because their daughter defected, they would say, "She left on her own and not because we told her to. If you keep bothering us like this, we will leave too."*

*- Female, 25, Yanggangdo, Kindergarten teacher, Left NK 2015*

*During Kim Jong Il's reign, unless you are among family members only, you couldn't openly express dissatisfaction about the government's policies. On the other hand, now in the Kim Jong Un era, we talk a lot about this with most friends. Even the SSD guards say, "What can we do, we just have to live by the national laws."*

*- Male, 46, Hamkyongbukdo, Manager at a collective farm, Left NK 2015*

## OFFICIAL CONTENT

While this report focuses primarily on the types of outside media being consumed in North Korea, North Koreans also consume domestic, sanctioned news and media. If North Korean authorities are successful in their attempts to curb citizens' access to foreign media content, it is presumably official media that will fill the space created in North Koreans' media diets.

The Korean Central News Agency (KCNA) is North Korea's sole state-owned news wire service. KCNA generates written news stories, which are used in provincial DPRK newspapers and are syndicated on KCNA's Korean website (both .kp and formerly through KPM, a Japan-based syndicator of North Korean state media), and in KCNA's translated websites.

North Korea's domestic broadcasting stations include radio through the Korean Central Broadcasting Station [KCBS] and Korean Central Television [KCTV]. KCBS and KCTV have several channels under their control, such as Radio Pyongyang and the Mansudae TV Network. State broadcasters air films, television series, concert films, children's programs and talk shows produced by studios under the Ministry of Culture (MOC) or from the Party History Institute, and occasionally foreign-produced content. KCTV's programming schedule is formulated and passed along to the Central Broadcasting Commission which conveys it to the Propaganda and Agitation Department's Information Section, which approves it or sends it back to the CBC with suggestions. KCBS airs radio dramas, children's programs, essays and editorials, and music.

In recent years there have been some attempts to cosmetically modernize aspects of state media in North Korea – from new graphics accompanying nightly news broadcasts, to television appearances of the scantily-clad Moranbong Band.

Even 3rd Broadcasts, the special propaganda and information broadcasts sent by wired radio into North Korean citizens' homes, have experienced some aesthetic changes in recent years.

*What has changed the most in 3rd Broadcasting is the voice of announcers. Through the Kim Jong Il era, announcers would speak in strong tones but now it has changed to a softer tone. Of course, it is not as lilting as South Korean announcers but people viewed it positively, wondering, "how one's voice can change so much." As the number of younger broadcasters increased, the way of speaking changed, too. Broadcasters are under the auspices of the Propaganda Office but there is a separate school that trains announcers.*

*- Female, 46, Yanggangdo, Provincial Post and Telecommunications Office employee, Left NK 2013*

However, compared with the foreign media circulating inside North Korea, the production quality of domestic media remains low and the content generally dry and repetitive.

*Recent North Korean dramas show the use of cell phones and show content that reflects reality to some extent. But the conclusion is that these shows emphasize loyalty, so it's no fun. Older series such as "My Family's Problems," "The People and Destiny" were actually more entertaining.*

*- Female, 49, Hamkyongbukdo, Housewife, Left NK 2014*

*North Korean dramas have no negative content, only positive. On the other hand, South Korean dramas contain things like police violence so we think it reflects truth. That's why we have a lot of fantasies about South Korea.*

*- Female, 57, Hamkyongbukdo, Industrial chemist, Left NK 2013*

*In the beginning I watched [South Korean] dramas for fun, but eventually I began to recognize differences with my country. There is even a big difference in the visual quality of movies. Recent North Korean movies are no fun and have low image quality. The more recent North Korean movies do reflect more of reality such as the use of cell phones, but the content always seeks to teach a lesson so it is boring. The movies made during the Kim Jong Il era seem to be made better.*

*- Male, 45, Hamkyongbukdo, Remittance broker, Left NK 2015*

While individual propensity to believe what is broadcast over state media varies between different demographic and psychographic profiles, state propaganda lines are often successfully transmitted through the domestic media. However, as the lives of ordinary North Koreans have increasingly diverged from the reality presented in state media, a trust deficit is apparent among many interviewees.

*There is an understanding that South Korean reports do not lie so I believed more than 80 percent of the content. North Korea does not report on domestic news if it is negative. On the other hand, South Korean reporting does not seem to hide even its own internal contradictions.*

*- Male, 45, Hamkyongbukdo, Remittance broker, Left NK 2015*

*When the power was on, we wouldn't watch North Korean TV but we would use CDs to watch foreign movies. Ever since the currency reform in 2009, there aren't many people who trust the North Korean reports.*

*- Male, 29, Pyonganbukdo, Paper factory employee/83 worker, Left NK 2014*

*When I was in North Korea, I did not have much interest and was indifferent to whether they developed nuclear weapons or launched a missile. However, I did feel a bit of pride when the satellites were launched. There was a movie I watched called "The Country I Saw" and it was about satellite launches. On the other hand, I never believed we had a strong army since soldiers also barely survived on two potatoes a day.*

*- Female, 20, Hamkyongbukdo, Candy maker, Left NK 2013*

Among the available forms of domestic media, television is likely the most influential. Eighty-one percent of respondents reported watching North Korean Central Television, making that broadcast the most widely consumed form of broadcast media.

> *I could only watch the Korean Central broadcasting channel on North Korean TV. I mainly watched animation and dramas. There was no particular reason for watching TV, but I just watched because I was bored. I had no interest in news about nuclear weapons and missiles. At the time, I just assumed money should be invested into the military if it intends to defend the country, and didn't feel any dissatisfaction.*
>
> *- Female, 25, Hamkyongbukdo, Service worker at the Hoeryong City Services Facilities, Left NK 2013*

Judging by qualitative research with recent defectors, as well as media consumption patterns, it is safe to assert that most North Koreans' foreign media consumption is not done with any kind of political motivation. Entertainment, psychological comfort, distraction and a source of practical information are all important drivers of foreign media consumption that potentially can be satisfied, at least, in part, by media the state could supply and would consider less politically problematic. Yet, to date, there are relatively few signs the state is attempting to systematically modernize and increase the appeal of North Korean domestic media to fill content demand that might otherwise lead citizens to seek out foreign content. This may be due as much to ideological imperatives as it is to an inability to create more appealing content.

While contrary examples of more creative forms of official media content do exist[26] and some experts have noted content improvements,[27] most outsiders who follow North Korean media closely have noted few significant new trends in the types of official media content available to citizens.

If North Korean efforts to reduce the influx of foreign media prove relatively successful, it will be important to monitor the degree to which North Korea is able to modernize domestic media content to fill the space created by censoring foreign media.

# MOBILE PHONES



Photo courtesy of NK News/C. Petersen-Clausen

In stark contrast to the harsh crackdowns on illegal media content that have continued throughout the Kim Jong Un era, the state has allowed a much wider proliferation of legal mobile phones than many observers anticipated following the introduction of the Orascom/Koryolink cellular network in 2008. As this section will explore, legal domestic mobile phones in North Korea may provide us the best currently available window into the future of the media and communications landscape in North Korea.

As of the publication of *A Quiet Opening*, Orascom had reported that domestic mobile phone subscriptions in North Korea totaled just over half a million[28] and survey data did not indicate that domestic mobile phones had spread beyond the elite, which made it difficult to study their effect. However, during the Kim Jong Un era not only have we seen continued growth of subscriptions as reported by Orascom[29] and the emergence of a new wholly North Korean owned mobile service provider, Star,[30] survey data suggests that domestic mobile phones are being acquired and used by a relatively wide swath of the North Korean populace.

## LEGAL MOBILE PHONES IN NORTH KOREA

While most respondents who had used domestic mobile phones in North Korea had used Orascom network phones, many recent defectors were already using phones on the newer Star network. Some interviewees reported geographic and fee structure considerations as drivers of choice between the two systems. There has been some speculation that the state's long-term aim may be to migrate Orascom users over to the wholly domestically owned Star network.[31]

*The 195 system was from Star and the 191 system was from KoryoLink and they had different SIM cards. As far as I know, the available network area is the same because it uses the same relay stations. The biggest difference between these two is that you can buy extra minutes with North Korean currency for the 195 system. I remember that with 5,000 North Korean won you could use as many minutes as you wanted within a month. On the other hand, the 191 system required you to use foreign currency to pay for additional costs. From what I re-member, North Korea made the 195 system because most of the profits from the 191 system went to an Egyptian company, Orascom Telecom. The 195 system first came out to the border regions including Yanggangdo, Sinuju, etc. Because they were compatible, people would buy the 195 system SIM cards for 1,000 Chinese Yuan and swap them. Nowadays, due to the increase in users, the 195 system also accepts foreign currency for additional costs.*

*- Male, 45, Yanggangdo, Doctor/Professor, Left NK 2014*

The bureaucratic process to acquire a phone is a lengthy and complex one involving the Post Office or the Ministry of Post and Telecommunications. As mobile phones have proliferated, a substantial secondary market for mobile phones that are already registered with the state has emerged to circumvent the arduous bureaucracy.[32]

This constitutes a noteworthy phenomenon when we consider the connection between digital surveillance via mobile phones (more on this later) and real-life phone users. There is evidence that enforcement of true ID-based registration of phones may be relatively lax. Many phones available for purchase on the secondary market come preregistered, most often it seems under the name of a Pyongyang resident. Leveraging bribes and personal connections, it appears that some phone dealers are able to buy preregistered phones which can be sold in the secondary market relieving the purchaser of the need to go through the state bureaucracy to acquire a working network phone. Some residents who wanted multiple phones reported using the ID of an older relative to register a second phone, but more common it seems is simply buying a secondhand phone preregistered in a stranger's name. This phenomenon presumably means there is often no recorded relationship between a SIM card/phone and the actual individual using it, making the link between what can be observed remotely and a specific individual somewhat more difficult to establish.

*I bought it using the name of someone I knew who lived in Pyongyang. At the time, there was no military post office in Gilju. Now, there are mobile phone shops in Chongjin and Hyesan. However, most people bought mobile phones from individuals since it took a long time to buy cell phones by using their own names. If you paid 100 to 200 more renminbi, you could get the mobile phones quicker. At the end of 2012, I changed the name on the cell phone to mine, at the post office.*

*- Female, 57, Hamkyongbukdo, Industrial chemist, Left NK 2013*

Secondary sellers were also commonly used when purchasing mobile credit.

*Generally, it is rare to buy the base rate or additional phone credits from a Communication Office. It seems like there are many times when the phone cards are siphoned off to private sellers. [Although I worked at the Telecommunications office,] I didn't think of smuggling cell phones out to sell. Because the Telecommunication Office strictly managed cell phones, they are to be sold only through that channel. It seems as though cell phones that are being sold preregistered are sold by individual merchants who are able to do so because they conduct business in superior units like in Pyongyang and Pyongsung.*

*- Female, 46, Yanggangdo, Provincial Post and Telecommunications Office employee, Left NK 2013*

Similarly, there is some evidence that devices can be physically altered for specific purposes if one manages to bribe appropriately knowledgeable technicians.

*Smuggled cell phones ... when they are turned on, have a menu in Korean but inputting or controlling them in Korean is not possible. I heard that they are only operable if engineers from the Telecommunication Office replaced a device in the phone. I once saw them working on about 100 cell phones piled on the desk. This is the way engineers earn extra money for themselves.*

*- Female, 46, Yanggangdo, Provincial Post and Telecommunications Office employee, Left NK 2013*

The types of phones legally available have evolved relatively rapidly in North Korea. Although "bar" and "flip style" basic and features phones are still widely used, advanced smartphones such as the Pyongyang and Arirang models are now available and appear to be gaining popularity among some segments of North Korean phone users.



Photo courtesy of NK News/C. Petersen-Clausen

## PROFILES OF MOBILE PHONE USERS

The proliferation of legal domestic mobile phones in North Korea has already had a significant effect on the North Korean information environment and has the potential to spirit greater evolution still. All data caveats and the potential for over-estimates notwithstanding, the 2015 BBG Defector, Refugee and Traveler survey data does seem to generally corroborate the supply-side account figures released by Orascom.[33] There is clear evidence that routine mobile phone use is prevalent throughout the country and reaches well below the level of traditional elites.[34] After being reintroduced in 2008, mobile phones not only became important communication tools, but they were also quickly adopted as important interfaces through which North Koreans could acquire, store, share and consume a variety of media file types. Mobile-phone-compatible removable storage such as SD cards (T or TF cards are the more common terms

used in North Korea) allowed those using their phones to access unsanctioned materials to protect themselves from inspection and share large quantities of files with trusted friends and family members. However, despite relatively rapid mobile phone proliferation since sometime in or around late 2013, mobile operating system updates have demonstrated the North Korean regime's level of sophistication when it comes to its ability to limit the use of mobile phones as a means to access unsanctioned media.

In the 2015 BBG Refugee, Defector and Traveler survey, 28 percent of respondents reported owning a domestic mobile phone when in North Korea. While it should be reiterated that it is not possible to make statistically meaningful comparisons across years given sampling and surveying limitations, this is a considerably larger proportion of the sample compared with previous studies.

There is also demographic evidence to suggest relatively broad proliferation of domestic mobile phones.

FIGURE 22: DOMESTIC MOBILE PHONE OWNERS BY AGE
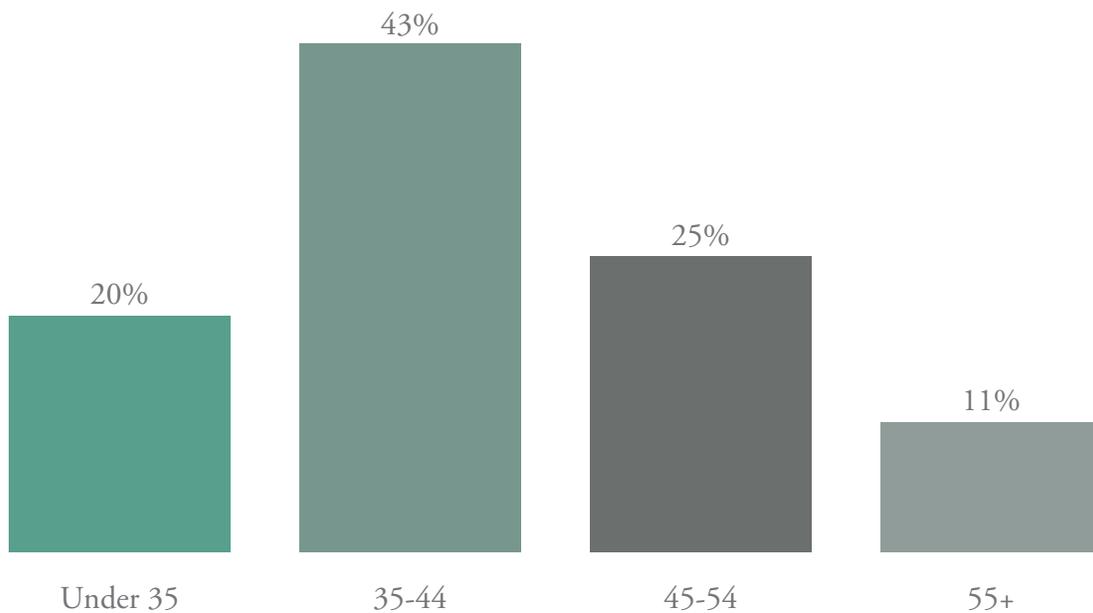


BBG Survey of North Korean Refugees, Defectors and Travelers (2015, N=350);
Base: n=99 domestic mobile phone owners

While the highest proportion of ownership was observed among those between their mid-30s through their mid-40s, many, both younger and older, owned phones as well. Domestic phone owners were somewhat more likely to listen to foreign radio (47 percent) or watch foreign television (40 percent) than the general sample, but most domestic mobile phone owners did not consume foreign broadcast media.

# FIGURE 23: DOMESTIC MOBILE PHONE OWNERSHIP, BY PROVINCE
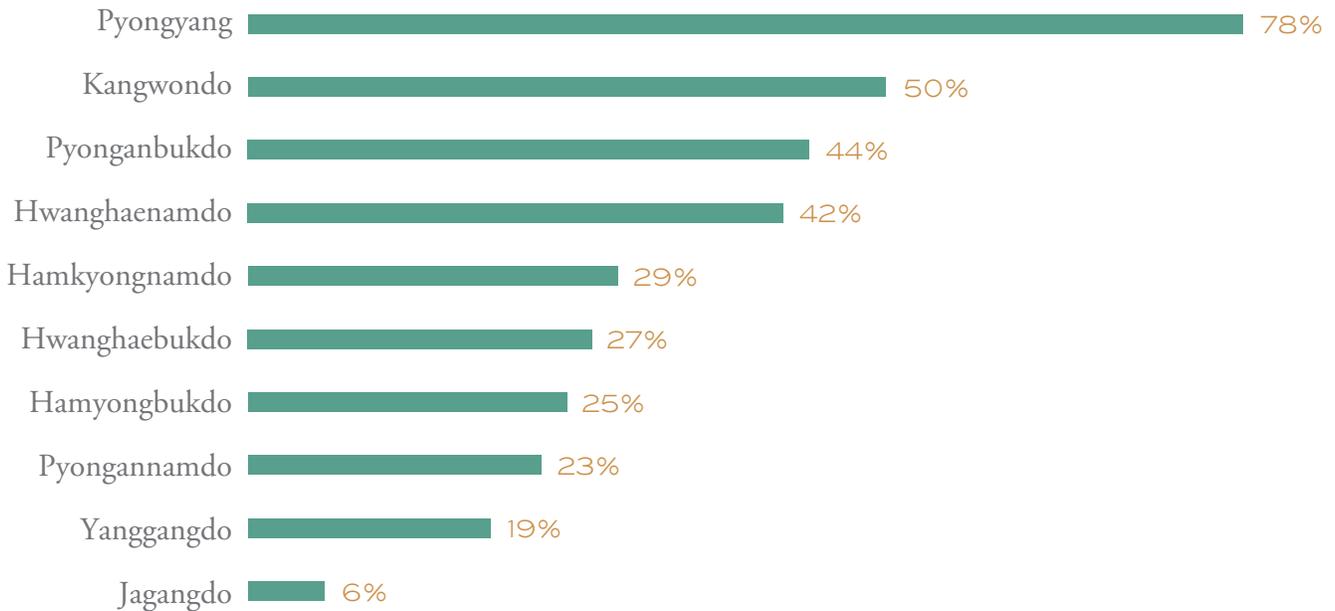
| Province | Percentage |
|----------|-----------|
| Pyongyang | 78% |
| Kangwondo | 50% |
| Pyonganbukdo | 44% |
| Hwanghaenamdo | 42% |
| Hamkyongnamdo | 29% |
| Hwanghaebukdo | 27% |
| Hamyongbukdo | 25% |
| Pyongannamdo | 23% |
| Yanggangdo | 19% |
| Jagangdo | 6% |

BBG Survey of North Korean Refugees, Defectors and Travelers (2015, N=350);
Base: n=99 domestic mobile phone owners

As one might expect, Pyongyang residents are more likely than those in the provinces to own domestic mobile phones, but for the first time, the 2015 BBG survey sample included domestic mobile phone owners from every province.

Beyond more general fissures such as place of residence and level of economic well-being, demographically, several different domestic mobile phone user profiles appear to be common in North Korea.

First are the active market participants for whom a mobile phone is a very utilitarian purchase. They use their phones to coordinate with suppliers and buyers, and generally manage the logistics of their business activities. Domestic mobile phones serve primarily as vital communications devices that save time and money. North Koreans with this user profile tend to have somewhat more basic model phones and use few features beyond calling and texting.

> *I used it for contacting and communicating with my clients in North Korea, but there was also an aspect of showing off. You look like someone of note when talking on a cell phone on the streets. You lose face if you have to borrow one from other people.*
>
> *- Male, 45, Yanggangdo, Doctor/Professor, Left NK 2014*

> *When smuggling [cross border], all you need is a Chinese mobile phone. I bought a North Korean phone to do business with a cement complex in Sunchon.*
>
> *-Female, 45, Yanggangdo, Wholesaler, Left NK 2014*

*I bought a cell phone to keep in touch with my clients in North Korea. When I contacted wholesale dealers, they gave me the current exchange rate. Almost every businessman has got their own cell phone since 2012. But as cell phones have come into wider use, it was difficult for me to gain an advantage because people knew the latest information on exchange rate. So the only strength of a cell phone for me was portability.*

*- Male, 29, Pyonganbukdo, Paper factory employee/83 worker, Left NK 2014*

A second group consists of young North Koreans for whom mobile phones are both a status symbol and an important media device. Younger mobile phone owners may use far less airtime than active market participants but tend to spend more time engaging with their phones. They are the most technologically savvy among the user profiles and utilize nearly all their phones' available features. It is no surprise that of those respondents in the survey that self-identified as consuming "sensitive media" on their mobile phones, all were under 45 and a large majority were under 35.

*I bought my cell phone out of pride. It was humiliating for me to have to look around to use a landline when even young kids were carrying cell phones around. It doesn't mean you're well off to carry a cell phone, but not to have one is embarrassing.*

*- Female, 28, Pyongyang. Waitress, Left NK 2015*

*I did not buy a cell phone out of need but in order to follow the trend. It was for the purpose of showing off. In 2011, around 40 percent of all the young people had cell phones.*

*- Female, 25, Hamkyongbukdo, Service worker at the Hoeryong City Services Facilities, Left NK 2013*

*On a good day, I would sell up to 20 cell phones a day. A lot of students bought cell phones. Because students are sensitive to trends, they have a tendency to take on the burden of buying a phone in order to follow others. I think students usually buy cell phones to play games and listen to music.*

*- Female, 46, Yanggangdo, Provincial Post and Telecommunications Office employee, Left NK 2013*

*Many people around me would buy a cell phone even if they had to go into debt. Even if they didn't really need it, people had a tendency to buy a cell phone just so they wouldn't fall behind the trend.*

*- Female, 46, Kangwondo, Wonsan City Forest Science Research Center librarian, Left NK 2014*

The third group, officials, is comprised of those with official positions in the state. The proportion of phone ownership among those who identified their primary, official occupation as government or party was comparatively high. However, qualitative research suggests that use patterns among this profile is likely more diverse than the previous two profiles. Some in this group were relatively unsophisticated phone users for whom phones appeared to be primarily a means of projecting social status. Yet this group also included quite advanced phone users, who utilized their phones as a media interface.

*I used three to four North Korean cell phones. Because the base charge in North Korea is quite cheap, if you used multiple cell phones, there was no need to incur additional costs. So usually people who conducted business used several cell phones. I used the cell phone under my name only for official calls and used the other phones in other people's names for secret phone calls.*

*- Female, 49, Pyongyang, Chemical engineer, Yongbyun facility, Left NK 2014*

Interestingly, many qualitative interviewees mentioned some version of status symbol or social signaling when describing their motivations for acquiring a mobile phone. Yet when survey respondents were asked about the main advantages of owning a mobile phone, a very small segment listed status symbol among their responses. Unsurprisingly, simply communicating with friends and family was the primary driver of adoption.

## FIGURE 24: WHAT ARE THE MAIN ADVANTAGES TO HAVING A DOMESTIC CELL PHONE?

100%  Keeping in touch with family and friends

78%  Doing business

2%  Status symbol

BBG Survey of North Korean Refugees, Defectors and Travelers (2015, N=350); Base: n=99 domestic mobile phone owners

*Before I defected from North Korea, I bought my family a touch phone. Installing a landline telephone was much more expensive than getting a cell phone because my home was located in the countryside. I know we can't call directly into North Korea from the outside but I thought we could connect if my family had a cell phone.*

*- Male, 29, Pyonganbukdo, Paper factory employee/83 worker, Left NK 2014*

# MOBILE PHONES AS COMMUNICATION DEVICES

It is difficult to overstate the degree of change occurring in interpersonal communications in North Korea. The country is transforming from an environment in which the state attempted to actively prevent horizontal person-to-person connection to one in which legal cell phones are greatly expanding the range and accelerating the speed of such connections.

An obvious but important development that has occurred as a result of significantly expanded access to mobile phones is the ability to connect with others across great geographical distances. Word-of-mouth networks traditionally centered around a geographically proximate node such as a market and expanded out concentrically from that nexus. However, mobile phones greatly expanded the geographic reach of person-to-person communications and have opened up the opportunity for new word-of-mouth networks to form unbounded by distance.

As horizontal connections across greater physical distances have become possible, trust between parties is extremely important in a system with little to no legal or institutional recourse to settle grievances, especially given the dubious legality of many economic interactions in North Korea.

*Even if you need to quickly transfer money, it can be done in a short time just by letting one's counterpart know the recipients phone number. … People checked the transfer of money by calling each other. There was no receipt, but merchants would write phone numbers and names of the persons receiving the money. There were no problems with this system. You cannot conduct business without trust. In the end, money was distributed only within the local area.*

*- Female, 57, Hamkyongbukdo, Industrial chemist, Left NK 2013*

North Korean authorities will no doubt attempt to enforce standards of acceptable mobile phone communication but evidence already indicates phone owners will clearly and naturally continue to push the bounds of acceptable use.

## FIGURE 25: WHAT DID YOU DO WITH A MOBILE PHONE IN NORTH KOREA?
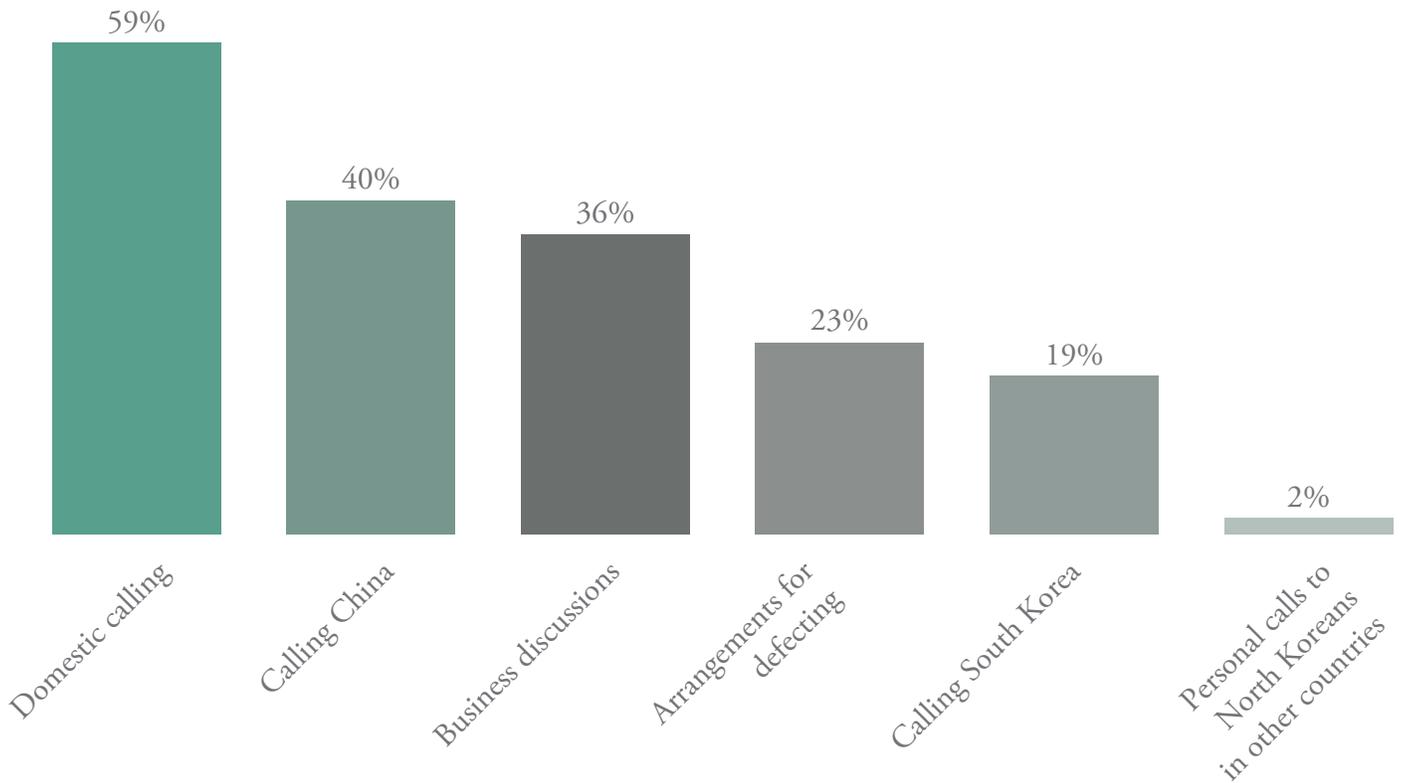


BBG Survey of North Korean Refugees, Defectors and Travelers (2015, N=350);
Base: n=250 mobile phone users

While not a single mobile phone user reported speaking about politically sensitive topics on the phone, they did communicate with one another about a variety of topics, particularly when conducting business, that were illegal in North Korea.

*There was a rumor that we shouldn't talk about political issues because our cell phones could be tapped. But I didn't think I was a subject of wiretapping so I was not particularly concerned.*

*- Male, 29, Pyonganbukdo, Paper factory employee/83 worker, Left NK 2014*

*As far I know, wiretapping existed, but I never felt that I was being tapped. According to my friend who worked at the security department … there were people who spent all day with earphones on, listening to other people's phone calls. My colleague lost his cell phone once and he was able to recover it using location tracking. I am aware that in the cases of people on the blacklist, they are being tapped. If necessary, it would be possible to tap people's cell phones, block or even track locations without consent and notice.*

*- Male, 33, Pyongyang/Hwanghaebukdo, Computer programmer at KCC, Left NK 2013*

Despite relatively sophisticated monitoring techniques, there is no way for the state to fully automate the monitoring of communications content in an actionable way. While authorities have the ability to strike quickly and severely against anyone whom they identify as a threat or believe has pushed too far beyond acceptable limits, mobile phones have already proliferated far beyond the various authorities' capacity to continually monitor all users all the time. North Korean mobile users have already begun using their phones to facilitate many illegal market activities.

## Figure 26: With whom did you communicate via mobile phone when in North Korea?
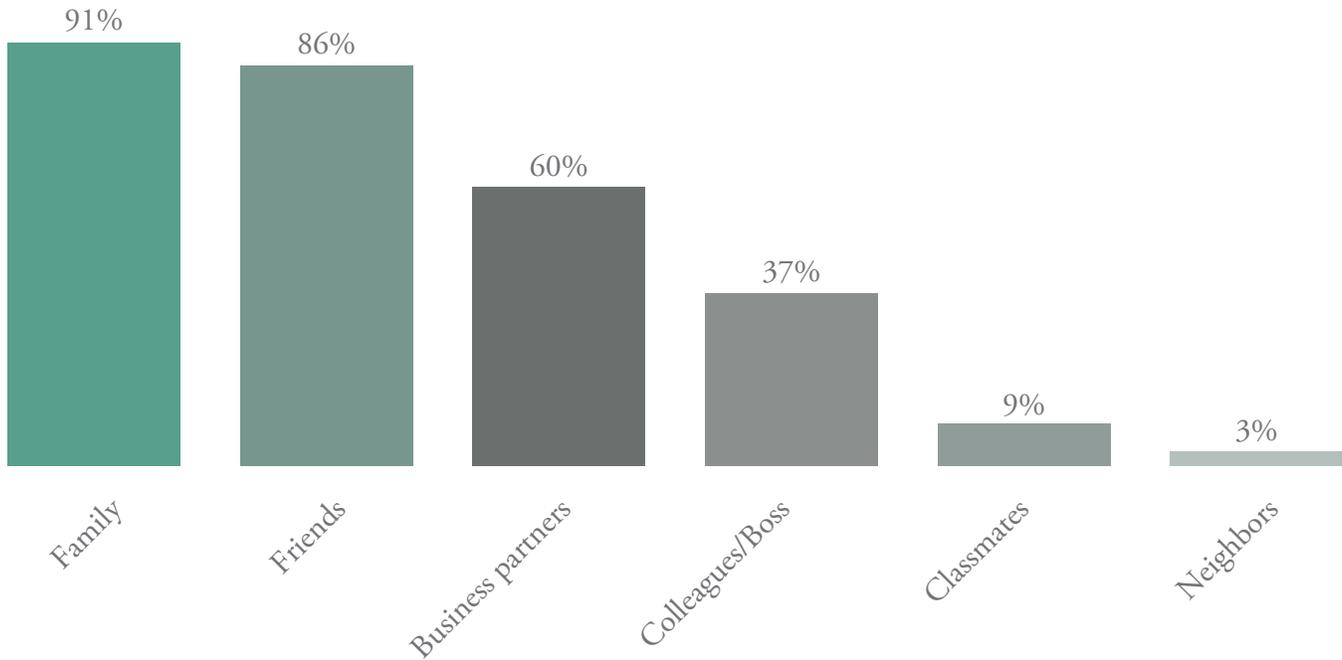


BBG Survey of North Korean Refugees, Defectors and Travelers (2015, N=350);
Base: n=250 mobile phone users

## MOBILE PHONES AS MEDIA DEVICES

Domestic mobile phone users have begun utilizing a number of features on their devices beyond simply calling. Illegal Chinese mobile phones, which were previously the only mobile phones available in North Korea, are generally only used for very short calls for fear of detection and punishment. Legal domestic phones by contrast are increasingly used for other activities such as sending and receiving text messages, taking and sharing photos and videos, and consuming media content. As they are legal and novel, North Koreans with domestic mobile phones are experimenting both with the full range of their phones' technological capabilities and the bounds of acceptable use.

## Figure 27: Aside from making calls, did you use your domestic mobile phone to:
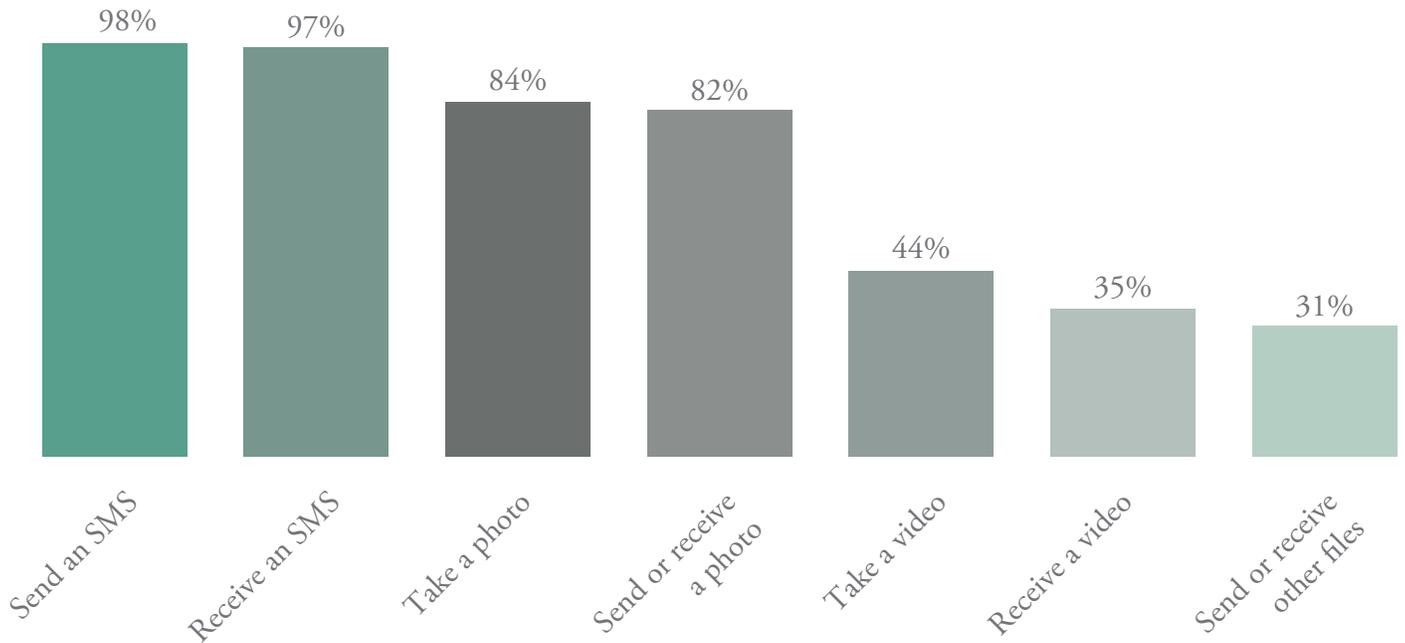


| | | | | | | |
|---|---|---|---|---|---|---|
| 98% | 97% | 84% | 82% | 44% | 35% | 31% |
| Send an SMS | Receive an SMS | Take a photo | Send or receive a photo | Take a video | Receive a video | Send or receive other files |

BBG Survey of North Korean Refugees, Defectors and Travelers (2015, N=350);
Base: n=99 domestic mobile phone owners

*I have seen North Korean Yukdamjib [pornographic novel] as a .txt file.*

*- Male, 45, Yanggangdo, Doctor/Professor, Left NK 2014*

*I know that you can use a dictionary on cell phones, but it is only available when you connect to the North Korean network. You can read the Rodong Sinmun (newspaper) on the phone, but not many people do that… I recorded a lot of videos when my family had special occasions or when I played with my friends. They were not videos for particularly special moments but rather of natural daily life. I was able to share North Korean songs and movies using Bluetooth. It took about five minutes to exchange videos that were 10 to 20 minutes long.*

*- Female, 25, Yanggangdo, Kindergarten teacher, Left NK 2015*

Although the North Korean cellular network is 3G capable and supports data services, the network used by the vast majority of North Koreans[35] does not allow access to cellular data beyond a small number of limited functions such as reading the state newspaper (Rodong Shinmun). International calling is disabled. Yet, as Figure 27 illustrates, North Korean phone owners do appear to be taking advantage of many of the phone and network capabilities. There is little evidence that digital cameras were widely owned outside the elite. Yet, mobile phone proliferation is giving an increasingly wide swath of the North Korean people the ability to take and send digital pictures.

Despite uniquely limiting network controls, many of the mobile phones now available in North Korea are powerful devices compared with what was previously available in North Korea. As more sophisticated smartphones became available, phone owners were able to utilize their phones' convenient integrated platforms for receiving, sharing and consuming a variety of different media types.

*I have used calls, texts and even Bluetooth. I have also watched South Korean video clips on my cell phone. There were no file type limits on smartphone, while only MP4, 3GP files were the only file types that could be played on regular cell phones such as the folder phones. .txt files can be used on any mobile phones.*

*- Male, 33, Pyongyang/Hwanghaebukdo, Computer Programmer at KCC, Left NK 2013*

Phone capabilities such as SD or micro-SD card compatibility and Bluetooth made domestic phones a powerful and important addition to the non-networked digital ecosystem in North Korea.

Available and widely used on both smartphones and less sophisticated feature phones, 61 percent of domestic mobile phone owners used Bluetooth. The feature was used primarily to send and receive smaller files such as photos, ringtones and songs. However, some respondents did claim to have sent larger video files via Bluetooth as well.

Perhaps even more vital to maximizing the utility of a powerful device such as a smartphone in an environment in which neither WiFi nor cellular data is available, and phones are often physically inspected for signs of illegal content or misuse, is the availability of removable micro-storage devices. Just under one-quarter (23 percent) of domestic mobile phone owners in the 2015 survey had SD or micro-SD cards. These small micro-storage devices allowed phone owners to efficiently share files by swapping the cards between phones and allowed potentially sensitive files to be kept on easily concealable and removable cards. As a result, phones could remain free of sensitive files in case of physical inspection and users could instead insert a micro-SD card containing the sensitive materials when they were in a safe location.

## FIGURE 28: HOW DO YOU ACCESS THE CONTENT OF YOUR SD/MICRO-SD CARD?
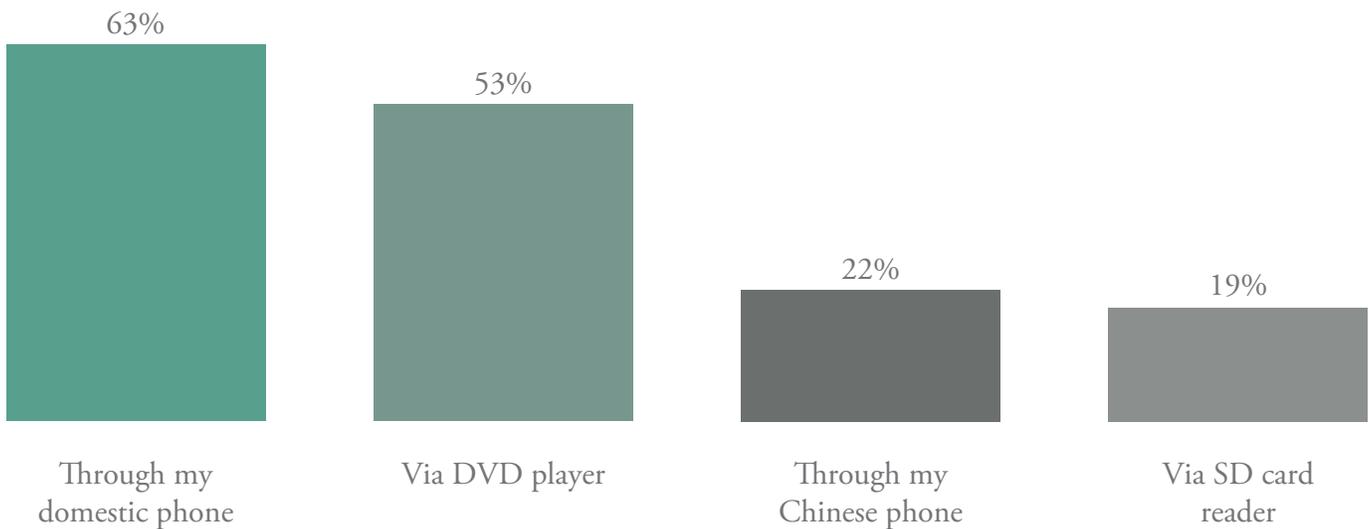


| | | | |
|---|---|---|---|
| 63% | 53% | 22% | 19% |
| Through my domestic phone | Via DVD player | Through my Chinese phone | Via SD card reader |

BBG Survey of North Korean Refugees, Defectors and Travelers (2015 N=350);
Base: n=32 who had access to an SD/micro-SD card

Fifteen percent of domestic mobile phone owners[36] reported using their phones to read, view or listen to sensitive media content. While respondents' subjective interpretations of what constituted "sensitive" content might vary somewhat, the subgroup of phone owners who self-identified as phone-based sensitive media consumers are interesting for several reasons. The large majority used Bluetooth on their phones and all had sent files to or received files from others on their phones. However, not a single respondent in this group claimed he or she would feel comfortable speaking about a sensitive subject on the phone.

From a demographic perspective, all were relatively young, under 45, and the large majority were under 35 years old. All but one engaged in business or trading outside of their official occupation. While none of the respondents in this group reported difficulty in finding the means to eat three meals a day, they generally did not appear to be particularly economically well-off compared to the overall sample. It is also interesting to note that self-identified consumers of sensitive content via domestic phones showed no strong provincial trend between Pyongyang, the border regions and inland provinces. While further research with larger groups of domestic phone users will be necessary to further establish the profile of those most likely to use their phones for sensitive activities, preliminary findings suggest no neat demographic predictors for sensitive phone use.

# MOBILE SOFTWARE-BASED CENSORSHIP AND THE SIGNATURE SYSTEM

As noted, for several years following their introduction in 2008, legal domestic mobile phones proved to be an extremely versatile addition to the digital media landscape in North Korea. They provided an integrated means of storing, sharing and consuming popular media types such as audio and video files. They also made it possible for a broader range of North Korean citizens to consume less frequently used file types such as digital text files, which were previously accessible only to the relatively smaller number of North Koreans who owned computers.

However, it appears that over the last several years, it has become much more difficult to use a domestic mobile phone as a tool for sharing and consuming non-sanctioned media content. A mobile operating system update pushed out sometime around late 2013[37] contained a software-based censorship system known in North Korea as the "signature system" (서명).[38] While most interviewees were unaware of the specifics of the system, and referred to it by referencing the color of the signal antennae on the phone display before and after the mobile OS change (blue before the signature system was introduced and red after), they generally reported it was mandated all phones have their systems updated. After the introduction of this system, mobile phone functionality was significantly altered.

The exact limitations imposed by the various components of the update that implemented the signature system are not entirely clear from qualitative defector interviews. For instance, some interviewees claimed Bluetooth no longer worked or only worked between certain devices after the introduction of the new operating system, while others claimed they were able to continue using Bluetooth.

> *Bluetooth and SD cards are still available even with the implementation of the signature system. It also doesn't affect cell phone functions. It is only that the settings are limited to allow only the signature file types to be played. There are many instances where people say they are unable to use Bluetooth, or SD card, after the implementation of the signature system. I believe this is due to the fact that they attempted to use non-signature system files. I think video clips that I made on my phone would be able to be played.*
>
> *- Male, 33, Pyongyang/Hwanghaebukdo, Computer programmer at KCC, Left NK 2013*

However, what is clear is that once the signature system was implemented, non-sanctioned media files were no longer playable on domestic mobile phones.

> *Bluetooth worked regardless of touch phone or bar phone. However, it didn't work after the system changed in 2013.*
>
> *- Female, 23, Hamkyongbukdo, Cell phone dealer, Left NK 2014*

> *Rumors began in 2013 that the cellphone system would change. I remember a full-scale change in the system began in July or August of 2014… There were some differences in the time period of the changed based on the various regions. As the system changes took place and the blue antenna (reception signal on the phone display) changed to a red antenna, people began to have more complaints. The speed and screen of cellphones became slower and dimmer. As the system changed, functions of cellphones became poorer than before.*
>
> *- Male, 42, Pyonganbukdo, Teacher, left NK 2015*

*According to my knowledge, the electronic "signature system" was created in 2010 to 2011. The system was designed to block what North Korea calls "impure" media at the source, from being played on electronic devices such as the computer. The basic operation method of this is a system to insert a specific signature into the files in order to classify them as illegal or legal. This is not related to the file extension. For example, let's say a file is given a signature. When the file is played on a device, a program that can sense the signature begins to operate and reads the signature. If the device recognizes it as a legal file, a subsequent action would follow. If it is recognized as an illegal file, it is unable to operate … I don't know exactly which agency is in charge of the "signature system," but I believe KCC designed it originally. It first started when KCC invented the "electronic signature system OS." KCC embedded the "electronic signature algorithm" in the OS kernel. It was this [algorithm] that later became embedded in mobile phones.*

*- Male, 33, Pyongyang/Hwanghaebukdo, Computer programmer at KCC, Left NK 2013*

Some interviewees claimed that files were simply unplayable, while others said that unsanctioned files were actively deleted if introduced via micro-SD or other means. In either case, the updated software placed a huge impediment on the ability of North Koreans to use their phones to access and share illegal media.
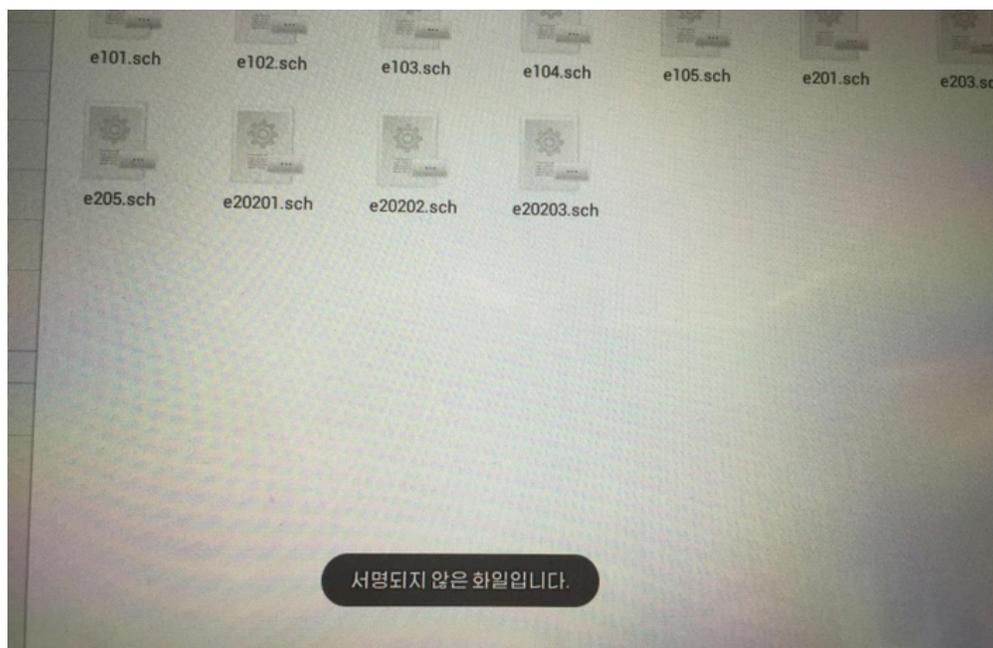


"Invalid file signature" error message on a North Korean device.

One interviewee who was previously a programmer at the Korean Computer Center (KCC), where the signature system is believed to have been developed, attested to its creation and sophistication.

*The signature system was adopted into the "Android OS" in touch phones. Touch phones went even further to allow only applications that were approved by the North Korean government. The file extension for files to run on the Android system is the APK file. It was made so that the electronic signature was embedded into them so that only the allowable applications could operate. As far as I know, if an illegal application is executed on an Android with an electronic signature system in place, it will not run. I examined a signature system out of curiosity but I was unable to investigate on how it operated. As a result of examining the file headers, I found that not all files had the same signature. My assumption is that a method is used to apply a specific key to certain files and subsequently encoded to create the output content. In 2013 when I examined and copied a file, I found that it could exist on my phone but not show up on the system. At the time, deletion*

*of the file was not possible. However, if the copied file itself can be deleted off the folder in the current cell phones, it is an indication that the security system has progressed.*

*- Male, 33, Pyongyang/Hwanghaebukdo, Computer programmer at KCC, Left NK 2 013*

A recent presentation by researchers from Insinuator laid out the process through which this signature system blocks unsanctioned files.[39] All applications that are installed on North Korean Android devices use software provided by the operating system when interacting with files on the device. This software "library" (gov.no.media.sign) is used by applications to dictate that they only use files with an appropriate signature (in the case of the file browser, MMS application, etc.), and to add signatures to files when they are created on the device.

There are two types of file signatures on DPRK Android devices: a government signature (NATISIGN or gov sign) and a device signature (SELFSIGN). Government signed files can be opened on any North Korean device and can only be created by the government. Device signatures are added to any file created on a North Korean Android device and can only be opened on the Android device that created them.[40]

## FIGURE 29: DIAGRAM OF FILE SIGNATURE PERMISSIONS[42]
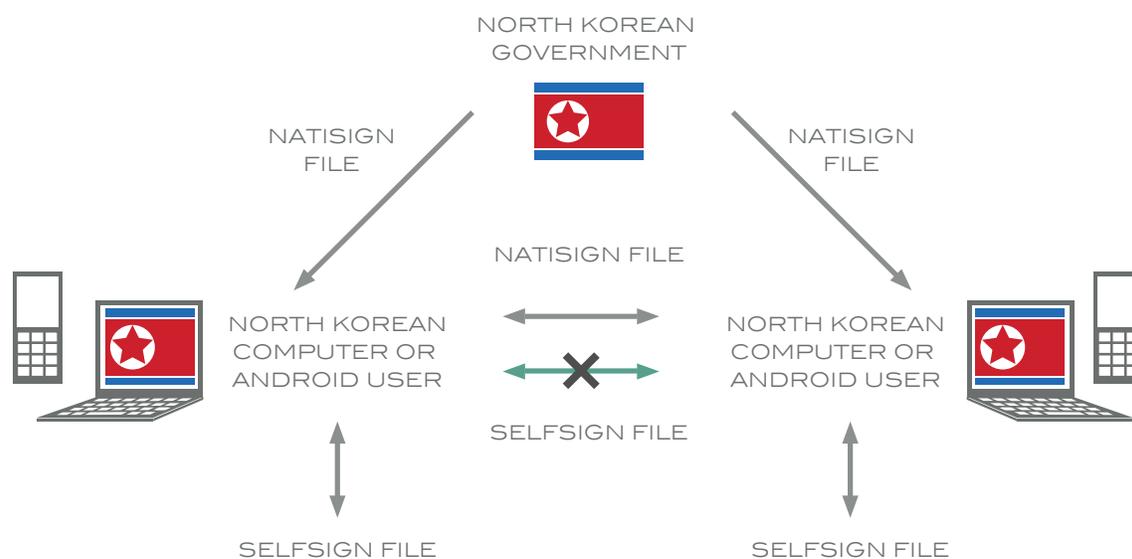


On the Android operating system, installation of applications and the viewing of media that have not been signed with a government signature by North Korean authorities will be blocked. This works similarly to the way that Apple controls the applications that can be installed on iPhones. Before an iPhone app can be installed on a device or released in the Apple "app store," a developer must submit that app to Apple, which then reviews it and digitally signs the app. In the same way that North Korean Android devices check apps and media for the DPRKs signature, each iPhone checks for the Apple signature before allowing an app to be loaded.

*The signature system was invented to block "impure" recordings. Only permitted files received the electronic signature and external files were made so that they could not be played. It was first implemented into computers and then subsequently expanded to other electronic devices such as mobile phones, touch phones, tablets, etc.*

*- Male, 33, Pyongyang/Hwanghaebukdo, Computer programmer at KCC, Left NK 2013*

While all outside applications and files have to be signed with a government signature, these devices allow files created on the device to be viewed by it, and only it. When a file is created (e.g., with the camera or office suite on the device) the application that creates it uses the "gov.no.media.sign" library to sign the file with the devices signature.[41]

This signature was originally created by the "Digital Signature Manipulation System" (전자서명조작체계 2.0), which is also referred to as "Red Flag." The signature consists of a device specific ID, a "hash" of the file. When applications interact with a file they check for their own device-specific signature. If the signature contains a different device identifier, it won't open. As such, files created on one phone or tablet cannot be shared with any others.

## BROADER MOBILE PHONE CENSORSHIP AND SURVEILLANCE MECHANISMS

The signature system's impact on the basic mobile phone functionality made clear to users that the state was attempting to crackdown on improper uses of phones through the devices themselves. Technical analysis of several North Korean phones reveals that the signature system is only part of an ambitious attempt by the government to provide citizens with mobile phones, while sharply limiting the potential for illegal use and opening up new avenues for surveillance.

While it can be dangerous to speculate about the North Korean leadership's motivations and specific priorities, it is possible to gain insight into the state's information censorship and control strategy by examining its attempts to stem the flow of unsanctioned media and information through mobile phones at multiple levels.

**Network Level:** For the system used by the vast majority of regular North Korean domestic mobile phone owners, international calling is not supported. While the network is 3G, cellular data is limited to very specific functions such as reading the state newspaper. Mobile users cannot access the internet via cellular data as is possible for users in much of the rest of the world. From a surveillance and monitoring perspective, North Korean authorities have the ability to monitor all trafficking that occurs over the network.

**Device Level:** Initially, device level controls were relatively modest. For instance, most phones did not have a WiFi function so even if phone users were in the presence of a WiFi signal they could not make use of it on their phones. However, after an initial period in which relatively minimal device level controls meant that North Koreans were finding ways to consume and share unsanctioned media, the introduction of updated mobile operating systems with advanced software-based censorship and surveillance features has made it far more difficult to access unsanctioned files on North Korean mobile devices.

**Human Level:** Random physical inspections of mobile phones are conducted by sources ranging from schoolteachers to members of specially tasked security units. The threat of such inspections means that phone users must take precautions to ensure their phones do not contain any signs of inappropriate use when examined. Historically, it has been easy to hide inappropriate behavior by removing SD cards with illicit media. It could be made far more difficult by the activity archive collected by a program called "TraceViewer." TraceViewer is one of the functions of the Digital Signature Manipulation System. It records the browser history of the user and takes periodic screenshots of their activity. It also includes code that allows this history to be bulk exported to an inserted SD card. This on-device archive of surveillance is not done clandestinely. TraceViewer is installed by default on North Korean Android devices and uninstallable by the devices owner. It allows the browser history and collection of activity screenshots to be easily viewed and exported, but not deleted, in a user-facing application. When an individual's phone is inspected, it is no longer being

inspected for illicit use at that moment in time, but for any illicit use logged throughout its history. And, with TraceViewer's ability to quickly and easily export its data to an inserted SD card, these histories can be collected quickly and easily from any phone by non-technical inspectors and passed along for further examination. It is clear that this device-level software application was designed for use by security personnel conducting in-person inspections.

## FIGURE 30: LEVELS OF MOBILE PHONE CONTROL

PRESENT AT TIME OF INITIAL MOBILE NETWORK ROLLOUT

**Network Controls**: No cellular data; no international calling; presumed ability to monitor individual communications
**Weaknesses**: Large number of subscribers means can't credibly monitor all communications all the time

INTRODUCED SEVERAL YEARS AFTER ROLLOUT

**Device Controls**: Registration; sophisticated software controls for censorship/file permissions and remote monitoring
**Weaknesses**: May be possible to undermine or circumvent some device controls; real ID registration undermined in secondary market

TRADITIONAL SURVEILLANCE AND CONTROL STRATEGY

**Human Controls**: Traditional human surveillance and threats of punishment
**Weaknesses**: Similar to other commonplace but technically illegal activities, bribes are often sufficient to avoid punishment

The state's attempt to introduce device-level content censorship tools is an effort unparalleled even in other highly authoritarian contexts. However, it is not clear that such controls were part of the initial mobile phone rollout design. It appears that the state may have initially put primary concern on limiting the potential risk from mobile phones as communications devices. Network level controls were built into the system before the mobile phones were rolled out. The network was designed to ensure the phones could not serve as a link to either the outside world by calling directly or via the Internet. Furthermore, the regime presumably has the ability to directly monitor all communications conducted over the network. One interviewee who worked at a regional office of the Bureau of Post and Telecommunications described some of the monitoring activities to which she was accessory.

*When a telephone switchboard connects … You cannot listen in to past calls but only to calls in real time. You can wiretap and record it… Phone tapping requires a certain procedure. The State Security Department or the Ministry of Public Security will come and order a tap saying, "This phone number is subject to surveillance. I will listen in." Once the Party Secretary of [the] Telecommunications Office approves the wiretapping, instructions are given … to "connect the number so that this line can be listened in on." In some instances, the call is directly bridged to the State Security Department so that the call can be listened in on from there. In such cases, when the phone subject to surveillance rings, the Department phone also*

*receives a signal… I received such demands for phone tapping about once every two months. When one is suspected of being a spy or having been bribed by [the] South Korean National Security Agency, that person's phone is tapped. There is also a separate machine that catches signals that State Security Department people will carry around to crack down on smuggling rings and Chinese mobile phones.*

*- Female, 46, Yanggangdo, Provincial Post and Telecommunications Office employee, Left NK 2013*

While it is difficult to say with great certainty, device-level software-based censorship appears to demonstrate the state's reactive capacity. This type of censorship was introduced several years after mobile phones were rolled out. Perhaps this was in response to undesirable user behaviors that were unanticipated or underappreciated prior to the launch of domestic cellular service. It might very well be the case that the signature system was adapted to mobile platforms and pushed out only after the regime realized the degree to which mobile phone owners were using their devices to access unsanctioned media files. This could account for the grace period prior to the introduction of the signature system in which North Koreans could explore the potential of their mobile devices to access and share illegal media. However, if this is the case, the bigger takeaway might be a demonstration of the state's awareness of how citizens were using their phones and its ability to nimbly and effectively respond to unsanctioned use with a technologically advanced software solution. The more recent removal of Bluetooth hardware on the Woolim tablet shows how long-term strategies can be rapidly implemented through temporary software solutions, while more permanent solutions are put in place.[43]

Examination of two North Korean Android devices from the latter half of 2014 showed rapid development and functionality changes. Each contained large sections of unused code littered with "debugging" information that hinted at future functionality. Earlier releases of the device even contained debugging libraries that were left in place by the developers. In these versions the "Digital Signature Manipulation System" (RedFlag.apk or RFService.apk depending upon the version/device) logs the browser history, takes screenshots in the background, and creates the device-specific signatures. But, unimplemented functionality for conducting full and rapid scans of the device and any inserted SD cards was actively being developed.[44] Skeleton code of "application white-listing" (described in the December 33C3 presentation on the Woolim tablet[45]) as well as dedicated SD card event monitoring were added during the six-month period between version releases.

Survey of respondents who experienced of the effects of the signature system on their mobile phones first brought North Korea's device-level censorship innovations to our attention. However, when technical analyses of North Korean mobile devices are compared to similar investigations of North Korean computer software, it is clear that what has been implemented on phones and tablets is the mobile equivalent of a larger suite of software-based censorship and surveillance solutions the North Korean authorities have developed for all North Korean devices. While it is impossible to say with any certainty, the development of these tools is the most compelling suggestion that North Korea could be preparing for greater network expansion beyond mobile phones, either through expanded access to the domestic intranet or perhaps even controlled access to the wider internet.

# SOFTWARE-BASED CENSORSHIP AND SURVEILLANCE BEYOND MOBILE DEVICES

Censorship and surveillance tools present on North Korean Android phones and tablets bear great similarity to a number of features present in North Korea's domestically developed Red Star operating system. It appears that many of the defining features of the device-level mobile phone censorship tools were already in development for desktop operating systems. Three core priorities appear to be guiding the design of the government's attempt to create a digital environment that enhances information control: automated censorship, tamper resistance and remote tracking and surveillance.

## AUTOMATED CENSORSHIP

North Korea has added signature-checking software to all of its approved computer operating systems (a modified version of Windows, and the post 2013 version of Red Star OS) that allows the state to check media files and applications to see if they have been approved by the government.[46]

Media signature-checking software examines all audio, video and image files on the device and on any storage devices (USB, SD, and/or external hard drive) attached to the device.[47] If files are found that are not properly signed, those files will be immediately deleted by the operating system. The functionality was unimplemented, but was in active development as part of the Digital Signature Manipulation System 2.0 on the North Korean mobile devices examined in our research. This software has been reported to be somewhat "buggy" for the Windows and Red Star OS versions causing the software to occasionally wait to delete files until they are opened or sometimes miss files all together.

> *I don't know how it is now, but back in 2013, the electronic signature in the OS, for example in Red Star, or signed XP, the signatures in those operating systems did not operate completely. What I mean by that is that things such as media files or sound files, which were not signed could be opened and viewed. In the case of programs, nearly every program was not signed, so those unsigned programs could just be saved and used. But on mobile phones they also embedded a signed OS, and those functioned satisfactorily and anything that was not signed would not run.*
>
> *- Male, 33, Pyongyang/Hwanghaebukdo, Computer programmer at KCC, Left NK 2013*

Since system errors would pop up often in the designated signature OS for computers, people often wanted to avoid using those operating systems; users in private homes, as opposed to users in businesses or institutions, could more or less get away with it.[48]

*So the rules are like this: First, they say install and use Red Star OS. Second, because it hasn't been long since the Red Star OS was made, so errors still exist such as not installing properly on computers. In cases like that, they say, install and use the signed XPs. Technically the rules say, if the technical aspects of Red Star cannot be installed, then use the signed XP. But even that signed XP, when you customize it, it doesn't work properly, so there are a lot of errors. So because of this, regular people do not use  it. Only corporations and those sorts of places, because they could be censored [at any time], reluctantly use it. But for individuals, they do not use the signed XP. They just use the normal operating systems like XP, Vista, and Windows 7.*

*Male, 33, Pyongyang/Hwanghaebukdo, Computer programmer at KCC, Left NK 2013*

An additional piece of censorship software called scnprc has been found on Red Star OS. The software scans text documents for specific patterns of words and phrases, and immediately deletes any file found to contain those words. The list of words and phrases had not been successfully extracted and translated from the operating system by researchers affiliated with this report, or publicly released by external researchers before the writing of this report. No equivalent software has been identified in the North Korean Android client.


## TAMPER RESISTANCE

North Korea has implemented tamper-resistant software programs within these systems to ensure that citizens cannot circumvent them. Each of these three operating systems (modified windows, Red Star OS and the Android mobile OS) has been built to resist attempts to disable or modify their information control systems.

Red Star OS uses a low-level application called rtscan that protects and hides files and running applications on the device from all users. This program protects running applications from either being stopped and/or seen when they are running, and protects files from being edited and/or from being read. For instance, rtscan hides snprc and protects the file containing the patterns used by snprc from being deleted.

Red Star also uses a program called securityd, which is both named and seemingly based on the "securityd - Security Server" that is used in both Apple's OSX and iOS to implement several security controls. This custom version of securityd not only mimics some of the basic security functionality of Apple's security, it also checks to see if other information control and security applications on the device have been tampered with or removed. If any of these applications have been changed or removed the program restarts the system. This check is run during the startup of the system as well. As such, if a change is made to one of these files and the device is restarted, it will enter a continuous restart loop which renders the device unusable. As one might imagine, this makes the information control systems on Red Star very difficult to disable.

Historically, disabling the Android RedFlag application, which blocks the installation of unapproved applications, has been less difficult. By restarting the phone in "recovery mode," a special minimal mode that is used by IT repair technicians to repair damage, make backups, and/or disable malware, a user could disable RedFlag. This would allow a user to install any Android-compatible application without RedFlag interfering. However, recent attempts at analysis have found that North Korea has disabled the recovery mode. Recent versions of the North Korean Android's RedFlag application also conducts "integrity checking" and will shut down the system if specific files have been tampered with or altered.[49] At the time of this writing, there is no publicly available method for easily disabling signature checking in Android devices. Furthermore, the device has also been designed to frustrate attempts at extracting the raw Android image, making it more difficult to analyze or study the software.[50]

Authorities have taken advantage of the increased use of personal technology within North Korea to automate censorship and surveillance. The development of mandated, domestically designed platforms for mobile and desktop devices for North Korean citizens will continue to allow authorities to embed censorship controls in the devices themselves. This circumvents the operational security practices of the users and corruption by security and intelligence officials. This also means that circumventing these controls will require advanced technical skill. Because of the networked nature of mobile devices, changes to the OS can be pushed directly to the devices. This allows the state to combat technical circumvention of their controls on a countrywide scale with minimal resources. North Korea appears to be on a path to adroitly reducing their security overhead in response to its resource challenges while vastly increasing its ability to conduct widespread surveillance and information control.

## SURVEILLANCE AND TRACKING MECHANISMS

The proliferation of domestic mobile phones and the abrupt changes to phone functionality users experienced when the signature system was introduced means that qualitative interviewees who had recently departed North Korea were able to speak directly about their experiences encountering one of North Korea's most advanced digital censorship tools. However, technical investigations indicate that while less visibly employed thus far, the North Korean state has developed additional digital surveillance tools.

In the version of Red Star (OS 3.0 released in 2013) analyzed for this report, the state was not relying on halting the distribution of illicit media by having the operating system immediately delete unsigned media files. Instead, they had included an application called opprc, which has two ingenious methods for tracking the offline distribution of unapproved digital content.[51] The first uses a modification of the digital signature process used to identify approved content. Whenever media files are found on the system or on any attached storage devices this software embeds a device identifier that is unique to each device linked into that file. As a media file is connected to different Red Star OS systems, each of those systems will append their unique device identifier to the end of the media files existing list. When these signature lists are examined, they show a content-sharing history that lists every Red Start OS device the file has ever been connected to.[52] This social network information gives North Korean authorities the ability to identify the first Red Star computer that the file was viewed on and the path that the content took as it was shared from computer to computer. If the current mandate that Red Star OS be installed on all computing devices by the end of 2016 is enforced, the DPRK could track confiscated illicit content back through the network of devices that viewed the content to identify the original smugglers and the key distributors of that content.

*In 2007, in efforts to "strengthen security," [North Korea] carried out a Red Star system project based on Linux. I joined for a short time at the beginning of the project. It was mandatory for all government agencies including the party and the Cabinet agencies to use the Red Star System. Even individuals in North Korea were encouraged to utilize Red Star. However, it wasn't to the point where people were being heavily punished if caught using the Windows system, but rather just had to pay a fine. In September of 2013, the 3.0 version of the Red Star system was in the midst of being developed. I heard that this new version of the Red Star would be similar to the Mac OS.*

*- Male, 33, Pyongyang/Hwanghaebukdo, Computer programmer at KCC, Left NK 2013*

The signatures provided by opprc are somewhat easy to identify and remove from files if a user has the technical knowledge. The second method opprc uses is through a sub-application called organ that uses advanced watermarking techniques and was referenced in the code of the leaked Red Star OS 3.0 but has not been examined directly.[53][54] In Red Star 3.0 it is described as software that can apply faint audio or visual "filters" to media files that uniquely identify a computer, but are much more difficult to remove. These filters act much like the filters one would apply to photos and videos in Instagram. But, instead of changing the visual appearance to improve the aesthetic quality of the file, these filters would subtly change the appearance of the media with a filter that can uniquely identify who has viewed that file.



Photo courtesy of NK News/C. Petersen-Clausen

## CONTRADICTIONS IN DIGITAL CENSORSHIP AND SURVEILLANCE EFFORTS

One extremely interesting feature of the automated censorship technology, which finds and deletes unsigned files, and the surveillance technology, which watermarks files to create a history of ownership, is that they are inherently contradictory. They work at cross-purposes, deleting the very files that would presumably be used to identify connections between files and users, and ultimately between users themselves.

The likely reason for this is that the systems were the result of independent requirements or innovations. This could reflect software developers' responses to competing mandates from above or developers' decisions to independently implement software that responds to differing needs.[55]

Extrapolating from the nature of the software being developed and introduced, there are two broad strategies the state potentially may be pursuing with regard to digital censorship and surveillance. North Korea's technical development suggests a two-pronged approach to creating its vision of a self-contained digital environment. On one hand, the

maintenance of a pure, self-contained, digital environment can be automated through the use of software that purges unapproved content and applications. On the other hand, North Korean security forces must identify and combat the flow of information outside of the self-contained environment. The automatic deletion of unapproved content supports the maintenance of the approved self-contained environment, while the watermarking of unapproved content is built to track the outside flows of information that need to be severed.

The need for these strategies is clear when considering the adroitness of the North Korean citizenry in responding to state censorship and surveillance. The misregistration of cell phones makes basic surveillance based upon registration meta-data less credible. But, if the state is willing to acknowledge this fact, methods for triangulating and otherwise reidentifying those individuals become available.

The seemingly contradictory nature of these two pieces of software exposes the challenges of attempting to create a perfect information ecosystem while protecting against the realities of dissidence. The tradeoffs North Korean security forces make between allowing enough dissident content to leak so they can identify and combat underground networks and enforcing a pure network are likely to be exposed in the functionality of software updates. By watching the strategies of the North Korean security forces become manifest in their software, knowledgeable observers will be able to gain a better understanding of how they prioritize the threats they face and the strategies they use to respond to them.

The amount of device-level control North Korea is attempting to establish is unique even among countries with tightly controlled, repressive information spaces. Surveillance and censorship in even the most closed and closing spaces in the world are primarily conducted on the network level. The ubiquity of devices in many countries makes the resources required to implement mandates on those devices simply unfathomable. In most countries, governments rely on the ability to make demands of internet intermediaries such as internet service providers and online service providers (e.g., email, social media, and file-sharing providers) to gain access to a user's online behavior. The recent expansion of North Korea's IT infrastructure, closed borders, and access to primarily government-provided digital devices for its citizens provided North Korea a unique opportunity to roll out a required operating system for all devices.

While most other countries have to make use of targeted malware and viruses to gain access to specific users' devices, mandating the use of domestically developed operating systems has given North Korea a platform that allows authorities to consistently reach beyond the network and into every citizen's device. While one country's security forces must ask Apple or Google to remove unwanted applications from their "app stores," North Korea prevents any unknown or unapproved application from loading onto a citizen's device. In this way, North Korea has circumvented a large number of the legal and administrative complexities that other countries' security forces face when trying to implement censorship and surveillance.

Many of the automated software-based censorship tools the state has developed function entirely at the device level. For instance, unsigned files or those containing specific search terms are identified and deleted as they are connected to the device. However, particularly for some of the surveillance features such as watermarking, their functionality is only fully realized in a networked environment. Currently, watermarking does follow files from device to device, but ultimately requires the confiscation and analysis of a file for it to become useful. With network support, this level of automated surveillance removes the significant overhead created by relying on human security forces to find and confiscate devices for analysis. For mobile phones, constant network connectivity is already a reality. However, access to other digitally networked spaces such as the intranet or internet are extremely limited inside the country. While it is possible to imagine other explanations, the potential for expanded access to the intranet or internet is one potentially compelling explanation for the development and inclusion of software-based surveillance tools present in Red Star.

The North Korean government is no doubt wary of a citizenry that is better connected to one another and less reliant on institutions of the state to conduct economic and social affairs. But, it is also hard for the government to ignore the appeal of a networked environment over which the state has full visibility and control in a largely marketized, post-mass-mobilization-era North Korea, especially if precautions are made to ensure the system is relatively closed to outside actors.

In the years since the research for *A Quiet Opening*, a meaningful shift has occurred in the information environment in North Korea. More advanced digital media and mobile phones, which were only starting to have a measurable impact beyond the elite in 2010, are now much more widespread. While this digitization has not supplanted more traditional forms of media, it has reshaped how North Koreans access, share and consume media and information. However, by the same token, it has opened up many new avenues for regime censorship and surveillance. Beyond the proliferation of digital devices, greater digital network access appears to be a further evolution, which could profoundly impact the dynamics of the information space.

There is little direct survey evidence to suggest North Korean authorities have granted substantially broader access to digitally networked spaces beyond the previously discussed proliferation of domestic mobile phones. However, such spaces do exist in North Korea and there is some evidence that access to digital networks may be expanded in the future.

## INTRANET AND INTERNET

### DEVELOPMENT OF THE INTERNET IN NORTH KOREA

As early as 1997, the North Korean government developed its first website for the Korean Central News Agency (KCNA). It subsequently launched websites for the Chosun Infobank in 1999 to help conduct business with foreigners and Silibank, in 2001, for email.[56] The first internet café, which was restricted to foreigners, was opened in 2002 by a South Korean firm.[57]

In the early 2000s,[58][59] North Korea established Gwangmyong, or "light," a domestic intranet. Its primary aim appears to be to transmit nonpolitical information, such as train times, weather, or technical and scientific information targeting businesses or universities. Gwangmyong is navigated via a browser called Naenara, or "my country." There are manuals and browsers which guide the user to sites. Gwangmyong, as would be expected, gives no access to the World Wide Web beyond the intranet.

Any intranet browsing on Red Star OS is done with the Naenara browser. This browser is a customized version of Firefox with a functionality built in that supports the automation of many of the controls put in place. Naenara has set North Korean-controlled internal network addresses for downloading automatic updates, and anti-phishing and anti-malware lists, and capturing crash reports. North Korea has customized this browser far beyond simply building the basic support functionality needed within their own networks. Authorities have extensively customized the default settings of this browser to have it speak directly to North Korean "proxy services," which act as intermediaries to

the rest of the internet. Naenara has hardcoded addresses that analysts believe act as intermediaries, monitoring and passing along Naenara users' search queries and geolocation requests. Email, RSS feeds and calendars are all configured to be sent to specific North Korean-owned addresses within the country.[60]

Naenara and all North Korean Android devices include only a small list of North Korean-controlled SSL Certificates, which control their ability to secure connections to websites and other online resources. Traditional browsers include a standard list of trusted "certificate authorities" which are tasked with verifying the authenticity of websites that a user securely connects to. North Korea has replaced this set of trusted organizations with a list of North Korean-controlled "authorities," which allow the government to view the contents of connections between any North Korean device and websites no matter what the security. In fact, by only including North Korean government certificates in order for these devices to trust the security of the connection between itself and a website, it must be proxied through an address that is approved by one of the North Korean "authorities."

All of these default configurations that allow devices to "proxy" its traffic through North Korea increases the ease of surveillance for the country. Instead of having to compete in the ongoing cat and mouse games conducted between government surveillance and commercial software tools like most other governments, North Korea has programmed surveillance directly into its users' devices. Even security updates for this Naenara browser do not come directly from the companies, but instead are reviewed and undermined before they can even arrive at a user's device.

Based on qualitative interviews with recent defectors, access to the internet in North Korea generally falls into the three categories described below.

## GENERAL POPULATION: THE NORTH KOREAN INTRANET

The Gwangmyong intranet is, in theory, available to the entire population via smartphones and computers for those who own them. All material, including user-loaded content in chatrooms, is screened and approved before it appears on the intranet. In practice, the intranet, beyond some limited mobile phone use cases, appears to be in use by a small fraction of North Koreans, mostly those who are associated with an institution that gives them access.

## ELITE ACCESS: INTERNET BEYOND THE INTRANET, ALBEIT LIMITED

Those in a small subset of the population, such as elite students, IT employees, business people involved in commerce with foreigners (e.g., tourism), and those stationed abroad in diplomatic missions, are allowed to access the internet beyond the intranet. This internet access is granted for specific purposes tied to their work or studies, and only with registration/permit and under restrictions and surveillance.[61] The enforcement, surveillance, and punishment patterns observed for this group today may be indicative of the protocols authorities may adopt if they ever attempt to expand internet access for the general public.

Certain domains, particularly South Korean ones, are restricted altogether and the ability to retain information beyond the physical point of internet access is severely capped.

*There is a separate internet browsing area, but when you enter that space, you cannot take in any sort of memory device. At the entrance, they inspect the IDs of people entering the area and check whether you have a memory device or not via a metal detector. From there, if you download some data to use later and want*

*to take it out with you, because you have no memory device there, and because they've blocked the USB ports and CD drives from being used, there is no way that you can copy it directly there yourself. If you want to take downloaded material with you, then you have to send the downloaded material to management and take it from them.*

*- Male, 33, Pyongyang/Hwanghaebukdo, Computer programmer at KCC, Left NK 2013*

One interesting possible side effect of these overly onerous processes for accessing outside content is the large amount of code reuse found within Red Star OS and in North Korean-attributed malware. This begins to make far more sense when one considers that the process to search online for the appropriate documentation or example code can take upwards of a month. Reusing existing working codes from other projects would be far easier than seeking out solutions on the global internet.

As one former employee of the Korean Computer Center recounted, at KCC, it was mandatory to install and use a program called i-Talk which shares the user's screen. The 100 to 200 people who were using the internet at any one time were monitored by three or four individuals who would cut access if they noticed that the user was using the internet for unapproved purposes or was viewing illicit content.

*Once one of my colleagues clicked and read an article about Kim Jong Un for about two minutes and it became a problem. He wasn't punished heavily but he returned to the company after receiving revolutionary training for six months.*

*- Male, 33, Pyongyang/Hwanghaebukdo, Computer programmer at KCC, Left NK 2013*

Those who monitor the KCC staff's internet activity are not internal to KCC; they work for the Publication Censorship Bureau within the State Security Department. This fits with the North Korean authorities' general principle of creating a web of policing in nonsymmetric, nonbilateral, complicated ways even among the surveillance agencies precisely to minimize the possibility of collusion or conspiracy.

Similarly arduous human surveillance over email was described in an interview with another recent defector who was formerly stationed within the State Security Department. He explained that email communication was monitored by the regime in a manual fashion. When an email is read by the central authorities and deemed unfit to be passed on to the intended recipient, a manually-typed "Message not delivered" is emailed back to the sender.

Authorities also attempted to limit the use of certain kinds of software for citizens authorized to use the internet.

*If you send an email, the record of you sending that email remains, so that is why email is the most preferred method. But for things like Skype, because real-time searches are not possible, programs like those were prohibited from use.*

*- Male, 33, Pyongyang/Hwanghaebukdo, Computer programmer at KCC, Left NK 2013*

Notably, restrictions around access to the internet for IT workers and other skilled workers operating abroad in official capacities can be less severe. Skype, for instance, would be accessible.

*The normal preference for the authorities for messenger was Skype. They really preferred Skype. For email, I think I used almost everything. I used Gmail, Outlook, and Yahoo. For messaging, the preferences of the clients all differed, so depending on what the client liked, that's what we used. Skype was used most often, then after that Google Hangout, then WeChat, then WhatsApp.*

*- Male, 33, Pyongyang/Hwanghaebukdo, Computer programmer at KCC, Left NK 2013*

## HYPER ELITE ACCESS: FULL UNBRIDLED INTERNET

North Koreans who can access the internet in an unrestricted fashion are an extraordinarily exclusive group, numbering as little as "a dozen or more families."[62] This sample is too small – and too little is known – to draw any firm conclusions about the usage patterns among this most elite group.

## REGIME'S INTERNET STRATEGY GOING FORWARD

On one hand, the North Korean regime is eager to capture the potential economic gains of intranet or internet expansion. Network expansion has been referenced by domestic media as an "economic growth engine" and "means to raise the people's living standards" (language used in articles in the Pyongyang Kyongje Yongu in 2010 and Rodong Sinmun in 2011). These references are sensible; intranet plus cell phones could result in economically meaningful increases in productivity as seen in other industrialized societies.[63] Perhaps more sinisterly, Rodong Sinmun, in the same year, also praised the growth of the sector as a "weapon in countering U.S. psychological warfare against DPRK and mobilizing popular opposition to U.S.-ROK alliance."[64] While the regime has implied it views the internet as a sign of modernization that it plans to embrace, it has long been committed to developing technical solutions, such as Red Star, Gwangmyong, and Naenara, that allow such an expansion but in a tightly controlled manner. It has proven its willingness to experiment with mobile penetration via cell phones while remaining risk averse (e.g., cell phones were banned for four years after the technology was attributed to setting off the railway station explosion in Ryongchon[65]).

*There have been many slogans for the "improvement of people's lives" but they rarely applied to people's daily lives. For example, the Kim Jong Il government in a joint editorial, declared "The importance of science and technology." However, I haven't witnessed any incentives or policies for engineers which would be connected to their achievements.*

*- Male, 33, Pyongyang/Hwanghaebukdo, Computer programmer at KCC, Left NK 2013*

It is reasonable to infer that the approach of the North Korean authorities toward the internet/intranet is likely to be one of cautious expansion. It is incrementally increasing internet/intranet access for pockets of the country but ensuring nothing fundamentally disruptive can occur. The government is keen to exploit the internet for economic and scientific development (e.g., "On Effecting a Drastic Turn in Land Management to Meet the Requirements for Building a Thriving Socialist Nation," in which Kim Jong Un called for the use of the internet to obtain information from abroad. Bruce 2012).

An understanding of the state's strategy as one of relinquishing "perfect control" for "effective control" is by no means new but remains largely consistent with new research findings and news reports. Terminologies such as the "mosquito net" (let in the "breeze" while keeping out the pesky mosquitoes) were established early on when the North Korean regime asked institutes such as the KCC, CIAST, and the 6.26 Technology Service Center to develop plans to achieve such a balance between economic gains and security risks.[66] Despite the existence of an intranet for some time now, outside of limited use cases via mobile 3G, usage has not seen a detectable increase since publication of *A Quiet Opening* in 2012.

As for changes at the policy level, it is often a challenge to know how signals from the top correspond to increased access for North Korean citizens. But incremental changes seem as though they may be on the horizon. At the time of this writing, the KCNA announced the establishment of an "Intranet" Protocol Television (IPTV) service which allows North Koreans, for the first time, to stream programming from any of the country's four official television channels, no longer tied to broadcast schedules.[67] Official advertisements for Woolim, a North Korean tablet already available in-country, boasted features that require intranet connectivity. The advertisement clearly implied that purchasers would be allowed to make use of these features on their tablets.[68]

Further underscoring the difficulty of speculating based on official signals, July 11, 2016 coverage on MBC[69] claimed that Kim Jong Un announced in April 2016 that North Korea would "open up the internet to national agencies and private individuals," only to be followed up the very next day by a Korea Times report[70] that the South Korean Ministry of Unification rejected the claims as covered by MBC. Still the most likely path appears to be slow progression toward expanded access, even if the specifics and timeline remain difficult to divine.

The most natural vision for the kind of digital information space North Korea appears to be slowly moving toward is one in which the network connects individuals within the country but is tightly closed off from the outside world, one in which non-sanctioned content is tightly censored and individuals are completely open to state surveillance, and one in which the state retains a distinct technological advantage over users. While authorities are clearly making technical strides toward this vision, there are clear vulnerabilities in the form of connections to the outside world.

# CONNECTIONS TO THE OUTSIDE WORLD: CHINESE MOBILE PHONES AND CROSS-BORDER BUSINESS

In practice, a complete and credible firewall around a closed information ecosystem is very difficult to establish and maintain. Despite crackdowns on cross-border flows of goods and people, and technologically aided efforts to censor foreign media content, there are doorways in and out of the closed system North Korea is attempting to establish.

During the famine period, the porous border with China was a key economic link for North Koreans who began trading as a means of survival when rations from the state ceased. China remains the source of many of the manufactured goods supplied into North Korea including the media devices which have facilitated North Koreans' expanded access to outside information. The areas of North Korea's northern provinces bordering China continue to serve as vital corridors to the outside world as gateways for trade, information and human movement.

It appears in the post-famine era, North Korean authorities have decided not to attempt to roll back interconnectedness among citizens, as evidenced by the proliferation of mobile phones and tacit acquiescence to the permanence of the market. However, under Kim Jong Un's leadership, a very sustained effort has been underway to bring the Chinese border under much tighter control.

> *The number of security posts at the entrance of Sinuiju increased to eight as well. Security in the Amnokgang was reinforced not just by the increase of security posts but also patrol boats conducting surveillance frequently. It is now difficult to cross over the river in Sinuiju.*
>
> *- Male, 33, Pyongyang/Hwanghaebukdo, Computer programmer at KCC, Left NK 2013*

The significant tightening of control of cross-border activities may speak to multiple state priorities, but, from a strategic perspective, securing the integrity of its closed information ecosystem by plugging a key leak is likely chief among them. While the North Korean information environment may be evolving internally with some official acquiescence, the state seems simultaneously to be making an effort to reestablish control over the confines of the ecosystem by limiting outside influence, be it from South Korean media or human traffic across the border with China. This effort is perfectly encapsulated by the introduction of a mobile phone network which allows North Korean citizens to freely communicate with one another but does not allow users to make any international calls.

## CHINESE MOBILE PHONES

One extremely important technological enabler of cross-border links with China are mobile phones that utilize Chinese networks for service in areas of North Korea along the border with China. With these phones, cross-border trade can be coordinated, North Koreans attempting to defect can make arrangements, and North Koreans who have already left can send remittances back to family or friends. The efficiency of all these activities is greatly increased with the increased prevalence of Chinese mobile phones inside North Korea. Fourteen percent of respondents had a Chinese mobile phone when in North Korea. These respondents, unsurprisingly, hailed from provinces that border China.

Regardless of the specific uses of Chinese mobile phones, their ability to connect directly to the outside world means those who use them are able to access information otherwise unavailable in North Korea.

> *I have the most interest in news about South Korea. The quickest and more accu-rate way to hear news about South Korea is to speak on the phone with a South Korean. While I had no connections to South Korea, I heard a lot through acquaintances. Since I worked as a remittance broker using a Chinese cell phone, I was able to access outside information more often than others.*
>
> *- Female, 49, Hamkyongbukdo, Diesel oil seller, Left NK 2013*

Chinese mobile phones have facilitated and catalyzed vital small and medium-sized economic links to China despite being the subject of severe and sustained crackdowns. Reports indicate that the 27th Bureau of the State Security Department is focused on the cities and administrative divisions located on the North Korean-Chinese border.[71] It is believed the 27th Bureau is involved in real-time monitoring of mobile phone activity and communications (calls and texts). It is likely that the 27th Bureau's missions include trapping and tracing handsets with SIMs and call minutes purchased on Chinese carriers either in China or through North Korean brokers for confiscation and/or heightened surveillance. Group 109 is also thought to be involved in the crackdown on Chinese cell phones, amidst its broader mandate of searching for all "ideological infringements" via various types of technologies.

> *Since the onset of the Kim Jong Un era, the task of regulating smuggling was handed to the State Security Department. Subsequently, house searches became much more frequent. What they search for most is the Chinese mobile phone. If you have a Chinese mobile phone, people will know it's a smuggled product. The crackdown became so intense that I even thought, it is now hopeless to smuggle goods here. In order to smuggle goods, you need a large sum of money so people borrow from a moneychanger. However, if you are caught and the goods are confiscated or money is spent for the bribe, you go bankrupt.*
>
> *- Female, 45, Yanggangdo, Wholesaler, Left NK 2014*

As limiting the use of Chinese mobile phones along the border has become a greater security priority, the technological capability of security forces monitoring for illegal mobile use and triangulating the location of the user has increased.

> *Once, I went into a house and made a call to China and inspectors came within 30 seconds. There are inspectors going around with an eavesdropping device to control calls to China.*
>
> *- Male, 59, Pyonganbukdo, Pyonganbukdo People's Committee affiliated Trading company, Left NK 2013*

> *To control smuggled goods and Chinese cell phones, officers of State Security Department carry around radars to detect signals.*
>
> *- Female, 46, Yanggangdo, Provincial Post and Telecommunications Office employee, Left NK 2013*

North Korean security forces also reportedly have put cellular signal jammers in place that are sufficiently powerful that people living on the Chinese side of the river have complained that their cell phone service has been impeded.

In response to the sensitivity associated with Chinese mobile phones, those who own and use them tend to take great precautions. Thus, the phones tend to be used almost exclusively for calling and those calls are generally limited to short durations to communicate vital information. These behaviors present a stark contrast to the increasingly sophisticated use patterns associated with legal domestic mobile phones.

# DEFECTOR LINKS

In addition to cross-border economic activity, Chinese mobile phones have allowed North Koreans who have left the country to remain directly connected to those still inside the country. Survey data suggests that approximately one-third of respondents who had been out of North Korea two years or less had already re-established direct contact with friends or family members still inside the country.

As of this writing, there are nearly 30,000 North Korean defectors[72] living in South Korea. Many of these defectors have been able to establish contact with family and friends who have remained in North Korea. As a result, there is a meaningful channel for information and funds from the outside to flow back into North Korea.

Qualitative research suggests that the general sentiments contained in communications from defectors back to family and friends in North Korea are positive and reinforce many of the favorable characterizations of South Korea and China that already are being fueled by word-of-mouth and exposure to foreign media. However, life for many recent defectors in South Korea can be very difficult and defectors also convey those realities to those they communicate with back in North Korea.

> *People who defect do not only speak well about their lives. I heard many stories from people about living in South Korea saying, It is difficult to work in South Korea. It is hard to live with a low level of education.*
>
> *- Male, 46, Hamkyongbukdo, Manager at a collective farm, Left NK 2015*

Due to the great sensitivity of using a Chinese mobile phone to communicate with a person in South Korea, most calls between family and friends are very brief and relate only the most basic information about each party's welfare.

In addition to information exchange, many North Koreans outside the country send money back to their families who are on the inside. In 2015, it was estimated that six out of 10 defectors in South Korea remitted money back to the north and in that year alone, sent a total of approximately 240 million KRW.[73] South Korea's National Security Act does not allow its citizens (North Korean defectors automatically become citizens upon arrival) to exchange any products, services, or communication with the North. As a result, defectors' remittances are technically illegal, and thus the role of China-based middlemen – and the mobile phone technology they rely on - are vital to the remittance process. These middlemen are reported to generally take a 30 percent commission.[74]

Many defectors in South Korea are relegated to working menial jobs for relatively low-wages. But given the economic disparity between the two Koreas, defectors can often send enough money back into North Korea to substantially impact the quality of life of those receiving the money.

> *The amount of money – RMB 15,000 to 20,000 - my brother sent to us while living in China was enough to feed a four-member family for a year. I also had a separate business so I did not experience much hardship.*
>
> *- Female, 49, Hamkyongbukdo, Housewife, Left NK 2014*

While defectors come from every part of the country, they are not dispersed in equal proportion. One important feature of the defector population is the concentration of defectors from a few key areas and cities.

A substantial portion of defectors hail from a few key "hotspots,"[75] which include large cities such as Pyongyang and neighboring Pyongsong, but are best exemplified by border cities such as Hyesan, Hoeryong and Chongjin. For example, despite accounting for less than 10 percent of the total national population, over 60 percent of defectors hail from the province of Hamkyongbukdo (where Hoeryong and Chongjin are located) according to Ministry of

Unification statistics. Qualitative research supports the notion that North Koreans residing in areas with robust defector-based links to the outside world are likely to be impacted by information and financial remittances entering those areas, even if they have no direct personal connections outside the country.[76] Examining trends and nascent changes in these areas may be useful for researchers attempting to understand the impact of a direct connection to the outside world on North Korean populations.

Recent defectors from these hotspots relayed their observations on attitudes and behaviors of those populations in those cities.

*At the end of November 2014, I had a huge change of thought when I went to visit my boyfriend's older sister in Hyesan. Prior to that, I had not been interested in politics and never really thought about it before.*

*- Female, 28, Pyongyang. Waitress, Left NK 2015*

*I had lots of interest in South Korea but I did not seek out specific information. In Hoeryong, most people would tend to envy someone if news spread that he or she had defected. In North Korea, those who only watch South Korean dramas maintain a fantasy in their minds that, as long as you make it to South Korea, you will live well. However, those who are in touch with their family in South Korea recognize that work is difficult and stressful in South Korea.*

*- Female, 25, Hamkyongbukdo, Service worker at the Hoeryong City Services Facilities, Left NK 2013*

*In the neighborhood, there were "remittance brokers" who delivered money that was sent from relatives in South Korea to the neighbors. I often observed those brokers going around making phone calls. However, they didn't necessarily disclose information about the outside world. It was only to the extent of boasting how much money they made by doing "phone call errands." And because young people need money to live, they are only interested in ways to make money. There aren't many rich people in the city of Hoeryong. But households that receive money from their relatives in South Korea seem to live relatively better.*

*- Male, 22, Hamkyongbukdo, Student, Left NK 2015*

*People in Pyongyang defect from North Korea not to improve their own lives. I was happier going back and forth from China rather than living in South Korea. But because of the future of your children, you can't help but escape North Korea.*

*- Female, 49, Pyongyang, Chemical engineer, Yongbyun facility, Left NK 2014*

# PERSON-TO-PERSON CONNECTION AND HUMAN NETWORKS

Crucial human links between those in North Korea and the outside world created via contact with cross-border business people and defectors spotlight the importance of human information networks in North Korea. Word-of-mouth and person-to-person connections are an incredibly important element of the North Korean information environment. This holds true even as digital devices and expanded access to digital networks alter the dynamics of media and information flows.

The North Korean state prior to the famine of the 1990s was designed to mediate almost all human interactions, outside of those within the immediate family, through organs of the state. This was the organizational manifestation of a mass mobilization system in which the social, economic and political spheres were all subsumed by the state, and a surveillance and control policy that incentivized citizens to monitor one another. The internal security apparatus in this system functioned relatively effectively through the Kim Il Sung era when the state could reward loyalty, and citizens' best chances for material and social improvement were to advance within state hierarchies.

However, in the post-famine era, the state could no longer hold up its end of the social contract by providing citizens with their material needs. As a result, through institutional atrophy, de facto marketization and bribery, institutionally structured, vertical channels of communications began to lose their predominance as did the factors which incentivized the populace to monitor itself. While post-famine marketization ultimately allowed citizens, and the North Korean state itself, to muddle through the crisis period, the fundamental working of the country, as most ordinary North Koreans experienced it, was significantly altered.

The kinds of economic interactions which underlie North Korea's de facto marketization were only possible as previously siloed individuals connected, traded and conducted business with each other. While it is possible to imagine the kind of economic transformation North Korea has experienced absent a significant influx of foreign media, it would not have been possible without marked increases in interpersonal communications.

Further solidifying and catalyzing horizontal social connections and interpersonal communications, the rapid proliferation of digital communications tools, primarily in the form of legal domestic cell phones, is one of the most potentially impactful developments to occur in recent years.

## ECONOMIC AND WORD-OF-MOUTH NETWORKS

Market interactions are only possible when buyers and sellers can connect with one another, and production occurs only when suppliers and manufacturers join together to create supply chains. Compared to a planned economy in which economic relations are centrally structured and imposed, a market economy relies on a complex and diffuse web of communications as individual buyers and sellers attempt to meet their needs and maximize their profits.

When survey respondents were asked about how they acquired their staple foods and basic consumer goods, the role of the market in their lives is overwhelmingly clear.

## FIGURE 31: IN NORTH KOREA HOW DID YOU OBTAIN…?



Staple foods
Consumer goods

| Received directly from the state (PDS) | Purchased with money from my official occupation | Purchased with money earned from outside my official occupation | Received help from others | Support from abroad |
|---|---|---|---|---|
| 9% / 1% | 1% / 2% | 85% / 87% | 13% / 5% | 28% / 29% |
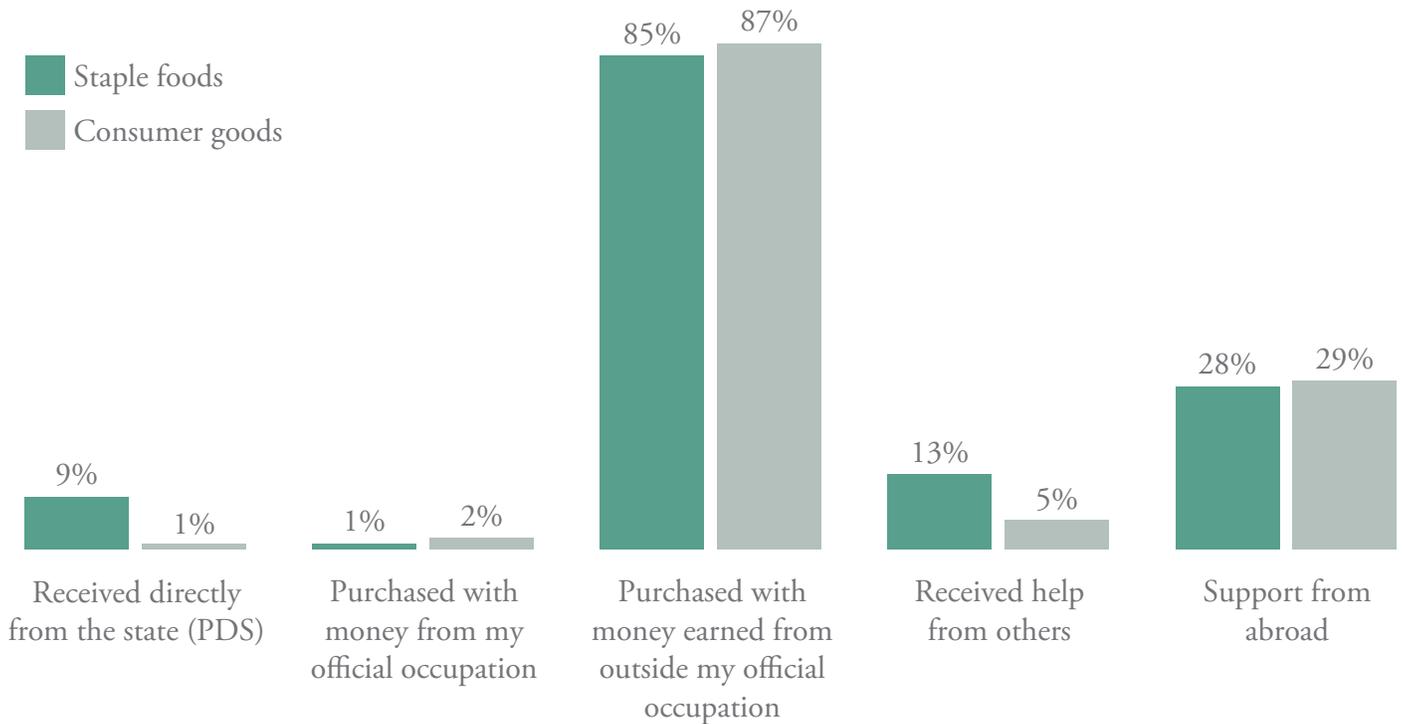
BBG Survey of North Korean Refugees, Defectors and Travelers (2015, N=350)

Most respondents had official occupations that paid salaries and, for a select few, rations provided a meaningful contribution to their needs.

*Rations from the company consisted of about 15 kg of mixed unglutinous rice and maize rice. Monthly salary was 3,000 won. The ration was enough for one person to eat with a bit leftover, but the salary is no help at all. Nonetheless, there was no economic hardship before the defection.*

*-Female, 50, Pyongyang, Accountant with a trading company, Left NK 2013*

However, for most, their official occupations were more a burden than a source of meaningful income. The massive disparity between official salaries and the market prices for goods meant the large majority of North Koreans had to rely on the market for even their basic needs.

*When I worked for Sunhueng Trading Company, my salary was 1,900 won. 1,900 won is enough to buy a hair tie.*

*-Female, 27, Pyongyang, Computer programmer, Left NK 2013*

Market participation by its very nature requires information and connection.

*If you want to work in trade, you have to have a wide breadth of information on topics such as politics, economy, culture, etc. It is expensive to obtain such information. Information on crackdowns is particularly important. If you want to know when they are cracking down, you have to be close with the party functionaries. Party functionaries live off of information. If we had known in advance about things like the closure of the Kaesung Industrial Complex, we could have coped with it … this kind of information becomes money.*

*- Female, 49, Pyongyang, Chemical engineer, Yongbyun facility, Left NK 2014*

The vital role human networks play in supplying privileged domestic information underscores how important non-media sources of information can be in a country where there is no open domestic media.

*What is most needed in trading is to know domestic policy direction. For example, information such as "border defense is going to be strengthened" or "the national border is going to be completely closed" is the most important. Next is what kind of and how many permits have been issued to what goods, and information regarding what goods are to be controlled. Money is made not through permitted goods but by smuggling in controlled goods. My friends who worked for Bureau 54 and Office 89 relayed such information to me on calls.*

*- Male, 59, Pyonganbukdo, Pyonganbukdo People's Committee affiliated Trading company, Left NK 2013*

Unquestionably these human networks and person-to-person information-sharing habits are affected by the introduction of new technologies. Mobile phones, while opening users up to new forms of surveillance, have obviously reinforced and significantly expanded the reach and speed of interpersonal communications and connections.

## NATIVE CONTENT GENERATION

The ability for citizens to communicate through mobile phones suggests the potential for native content generation in ways that previously would be difficult to imagine in North Korea.

While many qualitative interviewees reported successfully sending pictures and other files to others, analysis of a recent North Korean tablet suggests government efforts to limit the spread of user-generated content, as "self-signed" files appear as though they are not playable on other devices. Yet, inherent in some of mobile phones' most basic functionality as communications devices[77] is the potential for native, user-generated content to be spread, even in forms as simple as text.

*When it comes to the cell phones, I am not sure what policies exist. However, I know what kinds of usage can be cracked down on. Erotic novels such as "Yukdamjib" are cracked down on. Also if the cell phone's background has a moving picture (for example a video), it is considered to be South Korean and cracked down on. Sometimes even videos taken among friends were required to be deleted. As far as I know, those that are caught during a crackdown are fined*

*- Female, 49, Hamkyongbukdo, Housewife, Left NK 2014*

In addition to automated censorship authorities are trying to introduce some norms of behavior related to communications via mobile phone. Respondents related instances in which security officers examined text messages for signs of South-Korean language usage.

*In 2013, the group raided my home seizing cell phones and laptops. At the time, I sent my daughter a text message. Certain expressions were deemed "South Korean-styled," which became a pretext for them to seize my phone.*

*- Female, 49, Hamkyongbukdo, Housewife, Left NK 2014*

*I think we used a lot of foreign words and tried to appear sophisticated. We referred heavily to South Korean dramas for fashion guidance. We would use words like "style" and "wife" [said in English in South Korea] and even followed the South Korean way of speaking.*

*-Female, 25, Hamkyongbukdo, Service worker at the Hoeryong City Services Facilities, Left NK 2013*

It is noteworthy that security personnel monitor for traces of South-Korean language usage in texts messages when inspecting mobile phones. This serves as an example of not only the subtle ways that exposure to outside content can exert influence, but also for the way in which rapid digital communications can catalyze the development and spread of the product of that influence. While the marginal seepage of South-Korean language usage into the North may not be particularly impactful, it does underscore the potential for more rapid and spontaneous social developments in a more tightly, digitally connected society in which interpersonal communication is technologically boosted.



Photo courtesy of NK News/C. Petersen-Clausen

## NON-MEDIA PROPAGANDA AND CONNECTION TO THE STATE

The types of person-to-person horizontal connections, born initially out of the collapse of the state economy and now being solidified and catalyzed through the proliferation of legal mobile phones, constitute space outside of the state. As a result, the level of connectedness to the state that existed in the pre-famine period has been reduced, and, today, a far greater degree of economic activity and social connection occurs with little to no state mediation.

However, it is difficult for residents of most other countries in the world to conceptualize the degree to which North Koreans remain directly engaged with the state through a myriad of ideological education requirements and social mobilization activities. These have atrophied somewhat as North Korea has marketized, opening avenues to exempt oneself from many activities by paying bribes. There also are signs that state activities ring more ideologically hollow for many that do participate. That said, it is important to keep in mind how close most North Koreans remain to the state and party even as the market and outside information have allowed for some distance.

*I didn't trust what the North Korean authorities said that much because of the information I already knew. However, I still possessed basic loyalty toward my fatherland. Even though some said, "What's the country for when you are about to die in hunger," I still thought regardless of whether you die of starvation or not, one must have a fatherland.*

*-Female, 25, Hamkyongbukdo, Service worker at the Hoeryong City Services Facilities, Left NK 2013*

*Social mobilization occurs very frequently. In the spring, only husbands are mobilized for "householders' mobilization." The head of the people's unit walks around saying, "It is time for the mobilization for householders." The work is mainly to clean or maintain the Hyesandong district office or areas around the homes. If a certain region suffers from a flood, we are mobilized to go and help with rehabilitation work... There is particularly a lot of work during the summer when I would go out two to three times a week. A people's unit was divided into three separate groups, each consisting of 15 to 20 members. If you do not participate in the social mobilization, [you] must pay a fine.*

*- Female, 45, Yanggangdo, Wholesaler, Left NK 2014*

Regular ideological teaching meetings were important forums in which regime guidance was disseminated.

*The regime didn't allow people to enjoy foreign songs or videos by cell phones. In a lecture held every week, the regime told people not to watch illegal recordings.*

*- Female, 20, Hamkyongbukdo, Student, Left NK 2014*

Most interviewees claimed social mobilizations and ideological education persisted but had become somewhat more perfunctory, and participation was negotiable if one was willing to pay to be exempted.

*People openly complain to the head of a people's unit or the head of primary organizations saying, "You always ask for money without giving us anything in return." Heads of the unit, after hearing such complaints so often, now ignore the complaints and respond by saying, "What can we do? We should just do it regardless," while continuously leading the mobilization or taking the money.*

*- Female, 45, Yanggangdo, Wholesaler, Left NK 2014*

*A social mobilization proposed by the people's unit (Inminban) is held every two or three days. A unit leader wakes people up at 5 a.m. to perform chores such as removing weeds and sweeping or maintaining the streets. I would pay 3,000 North Korean won and not participate. The organization was comprised of 30 households and approximately 10 of them paid the bribe to not work. The rest would usually go out to work. There were also five to six households who would not pay and fought with organization leaders not to work. People are annoyed when they are told to participate in mobilization and pay money amid economic difficulties. Even the people's unit leader does not like to go from house to house. For example, he would instead, send a message to one household saying, "Come out tomorrow at a certain time to a certain location to complete a certain task," and then let it be relayed to other households. A leader is exempt from paying any money but the work is to organize the people. However, due to difficulties in managing households, people are reluctant to assume this position.*

*- Female, 49, Hamkyongbukdo, Housewife, Left NK 2014*

Mandatory ideological meetings and mobilizations continue to reach an extremely large proportion of the North Korean populace and provide a tangible direct channel from the government to its people. But, the ideological

substance appears to have hollowed out somewhat compared to the pre-famine era, particularly when reality departs sharply from state messaging or party authority is undermined.

*Although political ideology is strictly taught during the days of military service, in reality, a party member ID can be bought. Ideological education and reality are too different.*

*- Male, 31, Kangwondo, Border guard, Left NK 2015*

## THE STATE'S YOUTH FOCUS

There are some signs that as North Korea cracks down on foreign media consumption, the authorities are prioritizing the ideological revitalization of young North Koreans.[78] As previously noted, many of the cosmetic liberalizations in dress and behavior instituted under Kim Jong Un have been most favorably embraced by young North Koreans.

Similarly, young people have been enthusiastic early adopters of mobile phones. Some of the facelifts in domestic media may also be aimed at attracting a demographic that authorities understand has grown up with South Korean dramas.

In several instances, including last year's Worker's Party Congress, Kim Jong Un has emphasized the key role young people play in North Korea and proclaimed the state's intention to focus on their ideological health. However, while the permission to wear short skirts and jewelry is welcome and young people generally appreciate the optics of Kim's wife, Lee Sol Ju, appearing alongside him in press photos, most young interviewees did not view state attempts to re-engage youth favorably.

*In 2015, at the military parade commemorating the 70th anniversary of the DPRK Labor Party, Kim Jong Un proclaimed that after the people and the army, he values the youth. He stated the youth should lead the revolution and be responsible for the nation's future. I think he means as a young leader himself, he wanted to carry out a generational transition and place younger people in positions of power. However, for us young people, Kim Jong Un's message is burdensome. We worry what other tasks he will place on our shoulders and make our lives even more difficult.*

*- Male, 22, Hamkyongbukdo, Student, Left NK 2015*

Due to the transformative effect the Arduous March[79] had on North Korea's economy and society, the youth of today bring fundamentally different life experiences, and, therefore, perceptions and attitudes, toward the state. Unlike their older counterparts, young people in North Korea have no living memory of their country being a functioning socialist economy. They grew up far more exposed to outside media such as South Korean dramas, and are accustomed to providing for themselves in the idiosyncratic realities of North Korean grey market capitalism. Qualitative interviews with recent young defectors suggest that success, as they define it in contemporary North Korea, is more or less synonymous with financial success.

The degree to which the state can shape and signal a path that young North Koreans can take to meet their aspirations within North Korea will likely be a key challenge for state propagandists.

*Our grandparents' generation still say "Dear Leader" even until the day they die. I think it's because they remember the good times they experienced. But even my father would say things daily that were very different from my grandfather.*

*- Male, 29, Pyonganbukdo, Paper factory employee/83 worker, Left NK 2014*

Indeed, the parents of today's young North Koreans were the first to be forced to the market for survival. They are distinguished from the previous generation, which experienced the Korean War, and witnessed the North rise out of post-war conditions to surpass the South's standard of living for a period prior to economic downturn and then the famine of the 90s.

*I also cried bitterly when Kim Il Sung died but when Kim Jong-Il died, I didn't shed a tear. When the rations stopped and after experiencing the Arduous March, there was no affection for the government. You can say that, at that time, people who didn't trust the government became rich while those who believed the government died.*

*- Female, 57, Hamkyongbukdo, Industrial chemist, Left NK 2013*

*People who follow only what the government says are not able to survive. It is not an exaggeration to say that all those people died during the Arduous March.*

*- Male, 47, Pyongyang, Construction worker in Russia, Left NK 2014*

Reinforcing the degree to which many young North Koreans have come to rely on the market for not only their livelihoods, but as the most realistic path to a better life, young qualitative interviewees often invoked the highly punitive 2009 currency revaluation as an acute breach of trust between the state and its people.

*I do not believe there are many people who trust North Korean reports after the 2009 currency reform."*

*- Male, 29, Pyonganbukdo, Paper factory employee/83 worker, Left NK 2014*

*In my opinion, I think wide use of a credit payment system in North Korea would be difficult. To manage such a system would be the job of the state, but after the currency reform, the government has completely lost its credibility. I am doubtful how many people would use such a system with anxiety that they may lose the money that they deposited.*

*- Male, 33, Pyongyang/Hwanghaebukdo, Computer programmer at KCC, Left NK 2013*

Evident in trends from a desire to hold foreign currencies rather than the won, to personal aspirations to become successful through market means rather than through state bureaucracies, to generally greater levels of ideological apathy, there are a number of key ways in which many young North Koreans look substantially different than the generations that preceded them.

*People in this generation generally don't study much and start their businesses in the last year of middle school. Having only experienced hardship rather than good times, we seem only to be desperately looking for ways to make money.*

*- Female, 25, Yanggangdo, Kindergarten teacher, Left NK 2015*

The state's recent assertions of the need to focus ideological attention on North Korea's young people may reflect an understanding of the difficult task it faces in fostering the level of connection to the state that existed in previous generations.

The information and media environment in North Korea continues to evolve quickly. This report demonstrates that the depth and diversity of information and media access channels have grown markedly since the release of *A Quiet Opening* in 2012. More North Koreans have greater access to a larger variety of media content and communication devices. However, it is equally clear the North Korean state is determined to regain control of how and what information its citizens access. Rather than attempting to recreate the information blockade and national sequestration of the Kim Il Sung era, the state's recent technological innovations strongly suggest it is moving toward a new, but no less heavily controlled information environment. This is apparent when we examine current and emerging techniques for censorship, surveillance and integrity preservation across the network, device and human levels.

|  | Censorship | Surveillance | Integrity |
|---|---|---|---|
| Networks | North Korean network censorship is ensured by providing citizens separate internal networks that are not connected to global cellular and internet networks, and by strategic jamming of foreign radio broadcasts and cellular networks. | North Korean authorities' network surveillance still relies mainly on monitoring done by humans, but modernization appears to be underway as they move towards automation with automatic parsing of text messages, long-term meta-data collection, user location triangulation, and experiments with voice-to-text. | The relationship between North Korean security and telecommunications has advanced significantly since early security concerns aborted the initial construction of a nationwide domestic mobile telecommunications network in 2004. With millions of users, the telecom sector in North Korea has dramatically increased the proportion of citizens that are digitally networked. In exchange for relinquishing the control over the spread of information that isolation provided, North Korean security gained a far greater ability to monitor the communications of its citizens. |
| Devices | The North Korean state has historically fixed the channels of traditional media devices to state sanctioned channels and/or frequencies. It also has started to combat the "dual-use" capabilities of modern media devices by mandating the use of North Korean-made operating systems on modern digital devices that automatically identify and prohibit unapproved media and applications. | The capacity for ongoing and complete control over digital devices enables North Korean authorities to facilitate surveillance on the network and human level. But it appears that devices are mainly being leveraged to provide censorship rather than device-level surveillance. | North Korea appears to be replacing its traditional, resource intensive, human-based surveillance and censorship with technical means that reduce opportunities for corruption, and require significantly less ongoing resources to maintain and evolve. North Korean authorities have also implemented tamper-resistant software within their modern devices to ensure that citizens cannot circumvent software controls. Each of the operating systems released by the North Korean state have been built to resist having their surveillance and/or censorship systems disabled or modfied. |

| | Censorship | Surveillance | Integrity |
|---|---|---|---|
| Humans | North Korean security forces have responded to the increased use of digital media and and micro-storage devices with an increased number of crackdowns. This includes raiding houses and random stops of people on the street to check devices and external storage for illicit content. As with other human-based security controls, the citizenry quickly learned to keep their devices and their external storage separate when they were not in use. The government then further responded with TraceViewer, which allowed inspectors to view mobile devices' activity history. Even when a citizen is caught with illicit content they are still often able to use bribery to avoid punishment if the content they were caught with does not fall into highly restricted categories such as religious, pornographic, or political content. | Historically, North Korea has relied on a culture of fear and silence to control their populace. Neighbors spy on neighbors, and an extensive state intelligence apparatus operates to identify and sanction any type of dissidence. Security forces are now starting to be aided by the increased use of technology such as triangulation of domestic and Chinese cell phones to help them locate targets. | The dependability of the human elements of the North Korean intelligence apparatus has faced serious difficulties. The widespread corruption that is required for survival in North Korea has created a secondary market for intelligence and security agents, based on citizens bribing them to avoid punishment.  As a result, the human-based intelligence apparatus is routinely circumvented or subverted by the citizenry. However, specialized units such as Group 109 are specifically tasked with cracking down on illicit media and information, and are more difficult to evade or bribe. |

산 넘어 산 After Crossing the Mountain, Another Mountain

The North Korean state's new technologically enabled strategy is one born, in part, of a resource constrained post-economic collapse environment that requires tradeoffs. The state is finding ways to manage effective control digitally rather than enforcing perfect control through huge social mobilization efforts. However, the North Korean government is demonstrating continued commitment to curbing the expansion of foreign media and outside information into the country. It has displayed an ability to assess the situation on the ground and react dynamically and effectively, and there appears to be a considered strategic direction for information management and control in a marketized and digitizing North Korea. Rather than accepting the de facto opening of the information environment that has been occurring since the famine, the North Korean state is placing many new and sophisticated obstacles in the way of citizens who seek out non-sanctioned media and information.[78]

티끌 모아 태산 Many Small Things Accumulate to Make Something Large

As the information environment transforms from one characterized by near perfect state control to effective control, the dynamics of the space will continue to evolve. State-society negotiations over permissible social and economic behavior are underway as the state seeks to shore up control and develop forward from the famine, and the North Korean people simultaneously attempt to get ahead, secure their futures and ensure the well-being of themselves and their families.

All indications are that North Korean authorities are designing significant portions of a new control strategy around the expansion of digital networks, first in the form of mobile phones with intranet or limited internet expansion a likely next step. Although starting from a very low base, the introduction of legal digital communications technologies and acceptance of greater interpersonal connectedness among the North Korean people means individuals are less atomized and isolated. As a result, North Korean society as distinct from the state will be able to more meaningfully negotiate the prevailing rules of play in the country. While the state continues to maintain a huge power imbalance over its own people, these negotiations are likely to gradually make North Korea look less like an autarkic global outlier. It even suggests the possibility for the emergence of something resembling civil society. Thus, the next phase of the information environment in North Korea will likely be characterized by a trajectory toward greater opening in the way North Koreans communicate and share information, even as the state develops innovative new forms of digital censorship and surveillance.

In addition to the insights that we can gain through information sources such as refugee/defector interviews, it is instructive to understand how the bureaucratic structure, including organizational mandates and reporting lines of the North Korean party state, might affect the way in which policies and directives related to information, media and communications control are put into practice. As the North Korean state has taken steps to regain control of the information environment, it useful for careful observers of the North Korean information environment to have a working understanding of the elements of the North Korean state bureaucracy that most directly impact the availability and control of media channels. The following two appendices present some background on the bureaucracy surrounding telecommunications in North Korea and the North Korean security apparatus, respectively. Hopefully this bureaucratic structural perspective will give readers additional context for understanding the earlier discussion of the North Korean state's attempts to regulate legal mobile phone use and restrict access to foreign media and nonsanctioned information.[80]

# APPENDIX 1:
## TELCOMMUNICATIONS BUREAUCRACY

## POLICING LEGAL CELL PHONES

The Koryolink and Star networks are subject to controls and surveillance by at least eight ministries and organizations between the party, state and army. It is believed that cell phone calls and text messages are monitored and analyzed by elements of the State Security Department (SSD). Subscriber information and approval for attaining a subscription, along with network infrastructure security, is handled by elements of the Ministry of People's Security (MPS). Some cell phone and other telephonic activity is monitored by the Military Security Command, as well as the KPA General Staff Communications and Electronic Warfare Bureaus. Separate surveillance and monitoring reports are analyzed by elements of the Guard Command.[81] Handsets and subscriptions, as well as the maintenance of network infrastructure is handled by Korea Post and Telecoms, a state-owned enterprise (SOE) of the Ministry of Post and Telecommunications, which is part of the DPRK Cabinet. Cellular signal towers and base stations are placed on or near the network of TV and radio transmission towers which are under the control of the Central Broadcasting Commission (CBC). Cellular subscribers routinely receive SMS texts alerting them to Kim Jong Un's public appearances and other local news which are sent by the Central Information Commission (CIC). Both the CBC and CIC are part of the DPRK Cabinet, but are controlled by the Workers' Party of Korea (WPK) Propaganda and Agitation Department

At the top of the institutional heap is the WPK Central Committee, specifically the WPK Organization Guidance Department (OGD) which exercises broad policy and personnel control over the government, the national security community and the rest of the WPK apparatus.

STATE AFFAIRS COMMISSION ← POLICY AND PERSONNEL CONTROL — WPK CENTRAL COMMITTEE — POLICY AND PERSONNEL CONTROL → DPRK CABINET

Ministry of Post and telecommunications

KPA General Staff

SURVEILLANCE

Electronic Warfare Bureau    Communications Bureau

Military Security Command    SURVEILLANCE

Communications and Information Departments    Korea Post and Telecoms

LANDLINE AND MOBILE TELEPHONE NETWORKS    ← INFRASTRUCTURE

Investigations Department    Preliminary Examination Department    Surveillance Department    Telecoms Surveillance

Ministry of State Security    SURVEILLANCE

STATE OWNERSHIP

HUMINT Networks Domestic    Communications Interception Bureau SIGINT    Border Security Entry/Exit Control    Cadre Sureveillance

CASE-BY-CASE SURVEILLANCE

Ministry of People's Security

Investigations    Security    Public Safety    Registrations    Civil Defense

# MINISTRY OF POST AND TELECOMMUNICATIONS

The Ministry of Post and Telecommunications (MPT) is subordinate to the DPRK Cabinet and is tasked with the delivery of mail throughout North Korea, the construction and maintenance of the DPRK's civilian-use fixed telephone lines (i.e., landlines), the construction and maintenance of the DPRK's civilian-use, fiber-optic networks, and the construction and maintenance of its mobile communications network. According to Article 21 of the DPRK Constitution, "All natural resources, railways, air transport service, post and telecommunications...are owned solely by the State." The MPT also plays a major role in implementing the DPRK's IT policies.[82] The MPT provides fixed and mobile telephone service to North Korean citizens, as well as telephone services to the North Korean government. The MPT was responsible for the DPRK's telegraph infrastructure, but the use of telegraph was largely phased out by the 1990s.

The MPT has one state-owned corporate conglomerate, Korea Post and Telecommunications [KPT] for domestic service, joint ventures and foreign trade. KPT has joint venture companies Chekom Technology (with Orascom); Star Joint Venture Company (with Loxley Pacific) for the provision of internet service; and NEAT and T Joint Venture Company (also with Loxley Pacific), which provides mobile communications in the Rason Special Economic and Trade Zone.

Subordinate bureaus of the MPT include:
- General Affairs: responsible for providing daily administrative and operational management over MPT and its provincial branch offices
- Post and Publications Department: coordinates the work of post, parcel and publications delivery (i.e., DPRK post offices) and the country's physical civilian logistics networks
- Postal and Telecommunications Policy: formulates policies and regulations at the DPRK's post and communications offices
- Materials Supply Agency: distributes cable, modulators, switches and other post and telecommunications equipment; most likely involved in the import of foreign-manufactured telecoms equipment such as fiber-optic cables

- Central Information and Communications Department: divided into a dozen subordinate bureaus and subdivided into numerous "sub-bureaus" and is responsible for fixed-line telephone service in Pyongyang, intranet and internet service in Pyongyang; coordinates the activities of the provincial and local telephone and telecoms branch offices; and beta tests technology
- Information and Communications Production Department: coordinates the domestic development and manufacturing of telecommunications equipment by MPT-owned factories
- International Communications Department: manages dedicated access to international telecoms networks; coordinates international post and package deliveries to DPRK institutions and foreign organizations located within the DPRK; supervises the work of the International Communications Center
- State Stamp Bureau: produces stamps for domestic postal use as well as numerous commemorative stamps which mark both DPRK events and international content; the production of commemorative stamps is a small, but lucrative market for earning foreign currency from stamp collectors
- Central Optical Fiber Technical Management Department: supervises the work of provincial and local post and telecommunications branch offices on telecoms infrastructure; most likely responsible for new construction and maintenance of mobile networks
- Broadcasting Department: responsible for construction maintenance of terrestrial radio and television broadcasting and satellite relays of television broadcasts; it controls DPRK airwaves and coordinates provincial air waves control bureaus
- External Affairs: manages international post and telecoms agreements and relationships; serves as a liaison office to Chinese and Russian broadcasting organization counterparts

The MPT, in conjunction with the Ministry of Higher Education and the Education Commission, operates the Huicheon University of Communications. MPT also has technical training (vocational education) programs at Pyongyang Technical College, and other technical colleges in DPRK provincial capitals.[83] MPT personnel are also drawn from Kim Il Sung University, Kim Chaek University of Science and Technology and Chongjin University of Information Technology. MPT entry-level managers are recruited by the WPK Organization Guidance Department [OGD] in cooperation with the WPK Science Education Department from elite institutions of higher education. MPT personnel are also recruited from among KPA noncommissioned officers assigned to signals and communications service units during their mandatory conscription.

The MPT has at least two ministry-wide research institutes, one of which is the Information and Communications Institute. The institute conducts science and technology research and development in continued efforts at "modernization" of post and telecoms services, "powerfully accelerating science and research work."[84] MPT also has the DPRK Institute of Information Communication, which is responsible for the research and development of television and radio broadcasting technology. MPT collaborates on research projects with the State Academy of Sciences, Kim Chaek University of Science and Technology and Kim Il Sung University, in addition to its own universities and technical colleges under the direction of the State Science and Technology Commission.

MPT research and development personnel, in coordination or collaboration with their colleagues in other DPRK Cabinet bodies, routinely submit invention designs and patent applications. In February 2008, after the MPT formally entered into the Chekom Joint Venture with Orascom, which created Koryolink, scientists submitted inventions to a state registry including "a system of surveilling state of the communication lines," "a 30-line command telephone device, which it makes it possible to have a meeting using telephone and private telephone line" and a device for "orthogonal division wireless confi-dential communication device for short-wave telecommunication."[85] MPT also owns several foreign trading corporations, which import foreign-manufactured hardware, software and other infrastructure components and equipment.

The MPT directly owns and operates several industrial plants. It owns the Pyongyang Telecommunications Equipment Factory and the Pyongyang Communications Machinery Plant.[86] The MPT also owns the Pyongyang Optical Cable Factory, established with the assistance and support of the United Nations Development Program during 1992.

The MPT is one of the 33 ministries under the DPRK Cabinet. Telecommunications and postal policies are under the ultimate authority of the Information Industry Guidance Bureau, which takes its direction from the WPK Central Committee and Kim Jong Un. The guidance bureau is also responsible for policy guidance, and primarily focuses on IT for the Ministry of Electronic Industry, the Ministry of Electric Power, the State Academy of Sciences and the State Science and Technology Commission. According to policy instructions detailed in the DPRK's economy planning journal:

*The information industry consists of various internal sectors such as the computer industry, program industry and information industry and the development of each internal sector is mutually dependent on each other and restricts each other. In order to rapidly develop the information industry under these conditions, the important demand is to establish an overall information industry development strategy on the level of the state, sector and region, based on the scientific calculation of the internal sector's development, potential, prospects, and clear regulations regarding the people in charge must be set up.*

*In line with the demands of the development of reality and with the information industry era, a permanent central information industry guidance organ that guides and manages the country's information industry development in a unified manner must be set up, all levels of information industry guidance departments that are subordinate to [the central information industry guidance organ] must be built in sectors and regions (provinces, cities, counties), and these organs and departments must be made to uphold and conduct the establishment of the information industry development strategies in their corresponding ranges.[87]*

# APPENDIX 2:
## SECURITY BUREAUCRACY

**Information and Censorship Controls:** Policy and personnel control over sanctioned media and censorship runs from three departments in the WPK Central Committee to the state ministries and committees responsible for news, information and broadcasting

### WPK CENTRAL COMMITTEE

| Organization Guidance Department | Propaganda and Agitation | Cadres Affairs |
|---|---|---|

### DPRK CABINET

| Ministry of Post and Telecommunication | Central Broadcasting Committee | Public Information Committee | Public Guidance Bureau |
|---|---|---|---|

Radio Stations   Television Networks   KCNA
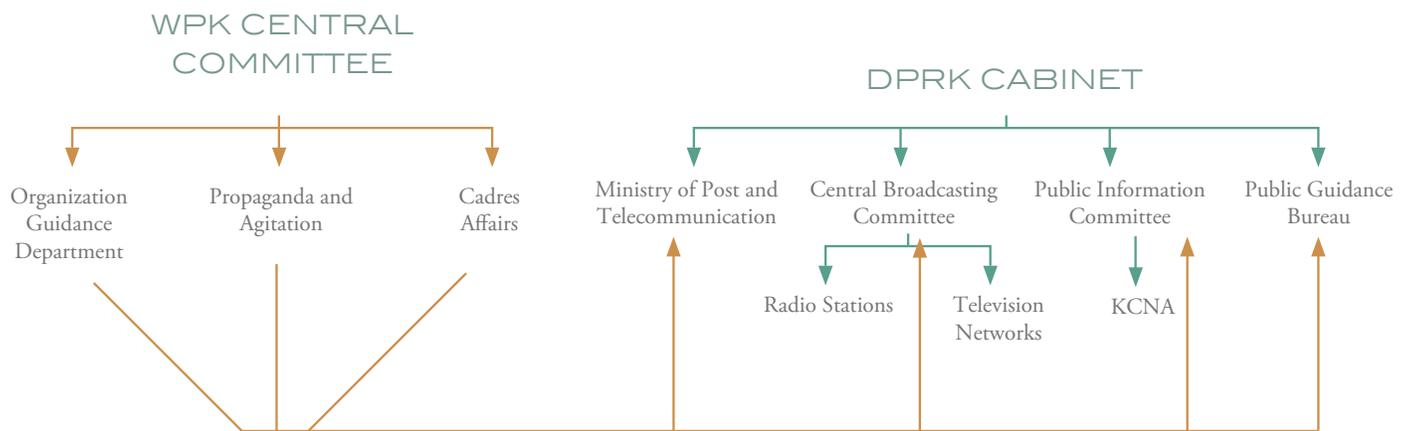
## STATE SECURITY DEPARTMENT[88]

The State Security Department (SSD) plays the largest role in monitoring cell phone usage.[89] SSD personnel stationed on the DPRK's border with China were some of the first users of mobile telephones in the country.[90] According to South Korean media during the early 2000s, a crackdown on cell phones purchased through Chinese brokers by a special task force under the National Defense Commission confiscated "some" unsanctioned cell phones used by SSD agents. The usage of cell phones "ha[d] long been essential for border guards and state security agents."[91]

The SSD is responsible for political security and counterintelligence. It monitors the behavior and activities of the entire DPRK population through a human intelligence network of informants and residential district systems.[92] It also sporadically monitors landline and cell phone communications through listening posts located throughout the country. The SSD tasks operatives to watch DPRK citizens who routinely travel to China, and a small contingent of SSD personnel are tasked to monitor DPRK citizens who live and work outside the country. The SSD maintains a network of political detention facilities throughout the country.

The SSD is headed by a Minister, currently General Kim Won-hong, supported by 1st Vice Minister (last known to be General U Tong-chuk[93]). General Kim, who reports directly to Kim Jong Un, is one of the few members of the DPRK elite who holds three of the top political positions in the party and state; he is full member of the WPK Political Bureau, a member of the WPK Central Military Commission and a member of the State Affairs Commission [SAC].[94] Ten Vice Ministers of SSD fall under General Kim's command. The SSD is formally subordinate to the State Affairs Commission, but issues daily reports to OGD. It has an estimated 70,000 regular personnel.

At the central headquarters level, the SSD contains over two dozen different departments and bureaus,[95] whose supernumerary unit names routinely change in order to protect the covert nature of the SSD's organization and activities. Each bureau is headed by a chief who is supported by managers, section chiefs and guidance officers. SSD subordinate bureaus conduct their missions and operate without coordination or interactions with one another. With the exception of "special missions" groups, SSD officers and managers from different bureaus are strongly discouraged (though not expressly prohibited from) interacting with one another. SSD officers are tasked by and report directly to their section chiefs. At the executive level and in the SSD Political Bureau there is a consolidation process (through which the reporting and functions of different SSD bureaus are managed and coordinated) to avoid administrative redundancies. The consolidation process is predicated on the crude principle of one SSD hand not knowing what the other SSD hand is doing in terms of surveillance, and facilitates total information awareness restricted to core political leadership and senior SSD officials. More fundamentally, and in a general context to North Korea's political culture, it allows Kim Jong Un and his close aides to monopolize and use surveillance information to buttress their dominance in North Korea's political system. This work method is critical to understanding why different elements of the SSD are involved in monitoring and surveillance of cell phone use.

The SSD has approximately 15 provincial-level branch offices in each of the DPRK's 28 cities (si) and 148 counties (gun). Each provincial SSD branch office has approximately 70 officers divided into mission-related bureaus who report to a section chief. Local (city and county) SSD branch offices have between 40 and 70 SSD officers, but are not divided into bureaus. The bulk of missions and tasks discharged by SSD provincial and local branch offices involve managing human intelligence networks that consist of informers in provincial and local government organizations, residential units and industrial and agricultural units.

Local SSD officers (operating in towns [ri] and neighborhoods [dong]), using data covertly compiled on residents in their given jurisdiction, approve applications for North Korean citizens to acquire a legal cell phone.

Specifically related to cell phones, the key SSD bureau responsible for collection, monitoring and surveillance is SSD's Communications Interception Bureau (CIB), also known as the Communications Interception and Surveillance Bureau and Communication Security Bureau. The CIB is primarily concerned with technical collection and surveillance communications, and signals intelligence with a focus on all internal telephonic and data traffic to foreign countries originating from the DPRK.[96] The CIB also maintains a staff of traffic analysts who study individual and collective user data. The CIB has provincial units that monitor all landline and cell phone traffic throughout the DPRK through a series of stationary and mobile eavesdropping devices. The CIB may do some content analysis, but by and large, it is involved only in collection missions and technical support for other elements of SSD. The CIB links with the Ministry of Post and Telecommunications, and with provincial telecommunications bureaus, for routine traffic collection.

The CIB's work involves mass surveillance and collection, not targeted and "real-time" monitoring of cell phone usage. The phone traffic collected by CIB is stored on central computer servers which are under the custody of SSD's data management section. As with CIB, the data management teams only provide technical support and supply their collection when requested by the two major SSD bureaus – Investigations and Counterintelligence – which would need recordings of telephone calls or transcripts of text messages.[97] Some anecdotal evidence suggests that CIB and the data management section operate under strict protocols and that SSD investigators need to have formal authorization before they can access data collected from cellular service providers.

The Investigation Bureau is responsible for investigating North Korean citizens for anti-regime and anti-state activities, while the Counterintelligence Bureau investigates and monitors DPRK citizens who routinely interact with foreign nationals, or who are believed to be providing information to foreign intelligence operatives or collaborating with unsanctioned nongovernmental organizations. There are central Investigation and Counterintelligence Bureaus at SSD headquarters in Pyongyang that conduct their own investigations and enquiries. The central Investigation Bureau

also coordinates the activities of Investigation Bureaus in SSD provincial and local offices.[98] The Investigation and Counterintelligence Bureaus can each start a file based on a potential investigation target's use of certain phrases or words collected and analyzed from the mass surveillance. Otherwise, and more often, they use data from cell phone usage as additional evidence in their investigations.

The Investigation and Counterintelligence Bureaus may find it necessary to monitor and/or record telephonic and text activity in real time (i.e., live). This is separate from the eavesdropping activities of "central inspection" and "special missions" groups. SSD investigators and other personnel have two ways of approaching this. In some instances, particularly for a corruption or espionage investigation, they can deploy an IMSI catcher (which geolocates cell phone activity) and then use a small portable monitoring device that captures radio transmissions, and target the cell phone using the handset's frequency. The other way the SSD might try to eavesdrop in real time would be to link with the SSD People's Security Liaison Department (at the central or provincial level) and request that the local Telecommunication Bureau tap into the investigation target's cell phone line (which is how the MPS conducts its own surveillance).[99] This process involves the Ministry of Post and Telecommunication's local Telecommunications Bureau providing subscriber data from the SIM card being used (in contrast to other carriers or networks, the SIM passwords would be retained by the central authorities). With the SIM information, the investigation target's calls and phone traffic are redirected into a specific frequency and SSD personnel can monitor the call and data activity in real time.

Since 2006, numerous defector media outlets[100] and interview data has indicated the establishment of the 27th Bureau within SSD to monitor cell phone usage.[101] A plurality of open source reporting, which draws on DPRK citizens who reside in different geographic regions in the country, indicates the 27th Bureau belongs to the SSD. Other sources indicate that it belongs to the Military Security Command.[102] In either case, it appears clear that the DPRK's internal security apparatus contains a 27th Bureau that monitors cell phone usage.

Based on much of the reporting, the 27th Bureau personnel are mobile, using a variety of monitoring devices from different positions to geolocate cell phone usage, and monitor calls and data usage. The 27th Bureau uses portable location finding systems and radio monitoring devices that are mounted on backpacks. Bureau personnel then position themselves where phone traffic passes. There are also accounts of 27th Bureau personnel using larger location finders and signal detection equipment on small trucks for mass surveillance in specific areas with a high concentration of communications, travel, migration and illicit shipments to China. Based on the reporting about the 27th Bureau's operations and where the reports originate, it seems to be focused on the cities and administrative divisions located on the North Korean-Chinese border.

Furthermore, the same reporting depicts the 27th Bureau as involved in real-time monitoring of cell phone activity and communications (calls and text). This makes it highly likely, in contrast to the CIB, that the 27th Bureau's missions include trapping and tracing Chinese cell phones in the border area in order to confiscate or surveil them.

## MINISTRY OF PEOPLE'S SECURITY

The Ministry of People's Security (MPS) is the DPRK domestic law enforcement agency, combining a police department, civil defense force and homeland security. The MPS and its subordinate civil defense and homeland security agency, the Korean People's Internal Security Forces (KPISF), is the largest of the country's internal security services with between 300,000 and 400,000 personnel. The MPS and the KPISF are responsible for a number of core functions including: policing; the investigation of statutory crimes; arrest, detention and incarceration of criminals; protection of critical infrastructure; public safety functions such as fire departments, and road and railway security; guard functions at government buildings; close protection escorts for senior DPRK officials; internal travel controls; records registration; and a diverse number of construction, engineering and logistics missions.

The MPS is formally subordinate to the State Affairs Commission and is led by a minister, currently General Choe Pu-il, who is concurrently a member of the SAC, the WPK Political Bureau and the WPK Central Military Commission. The second ranking official in MPS is the political director of the KPISF, Colonel-General Kang Pil-hun. General Choe is supported by at least a dozen vice ministers and directors. There are 12 provincial-level People's Security Bureaus with between 400 to 500 personnel, 28 city (si) People's Security Departments with between 200 and 300 personnel and 145 county People's Security Departments with between 60 and 150 personnel. Towns (ri), administrative divisions (dong) and industrial production units also have People's Security Offices which can have between five and 15 personnel.

Institutionally, MPS differs from SSD in two notable ways. First, there are clear lines of communication between and among MPS subordinate bureaus at the central (headquarters) level, and, additionally, clear and horizontal lines of communications between and among provincial and local People's Security bureaus and departments. This is in contrast to SSD, where there is little coordination or communication between equivalent offices and between equivalent bureaus.[103] Like other DPRK institutions, however, MPS reporting channels themselves are vertical; subordinate departments and bureaus report up, and instructions and guidance are passed down. Second, in contrast to SSD, provincial and local People's Security Departments all maintain the same organizational composition with the same basic subordinate units: investigations, records registration, public safety, civil defense, surveillance, and, communications and logistics.

People's Security officers on patrol (North Korea's beat cops) or guard duty have the authority to stop cell phone users and inspect their contents including call history, message data and media content. They can also arbitrarily confiscate handsets and other mobile devices.

With regard to cell phone usage, the MPS serves as the main gatekeeper in DPRK citizens' access to procuring a handset and Koryolink.[104] The process for obtaining access to cell phone service in the DPRK is very similar to that for having a fixed telephone line installed in one's home.[105]

To obtain a Koryolink calling plan, DPRK citizens must complete an application at the local branch office of the Communications Technology Management Office, which is subordinate to a local Telecommunications Bureau (usually based at the local post office), under the Ministry of Post and Telecommunications. As part of the application, DPRK citizens must present copies of their basic records including their birth certificate, residency certificate and national ID card. The original documents of a DPRK citizen's basic records are kept in the custody of and can be obtained from the Local Registration and Public Registration sections of the local People's Security Department/People's Security Bureau.

The Local Registration Office furnishes the residency permit and "citizen's certificate" document North Korean citizens need to move into their housing, and a copy of which DPRK citizens are required to keep among their personal affects in their homes. The Local Registration office also maintains detailed demographic information, and some personal background details, on the local population under its geographic jurisdiction (i.e., a village [ri]). The People's Security Office keeps these population records and, in turn, the county People's Security Department keeps duplicate population records on citizens in the country). The Public Registration section issues basic records (birth certificates, marriage licenses, death certificates) to DPRK citizens in its geographic jurisdiction.

With their Koryolink application and basic records in hand, the applicant then must seek the approval of the head of the neighborhood/residential unit (inminban). Sometimes they must seek further authorization from a manager at their workplace. The application is also presented to a local SSD officer. With these authorizations, the applicant will then present the application back to their local People's Security Department/Office. During the interview process, MPS personnel will ask the applicant to make financial disclosures as to how the handset and subscription will be

paid for before approving the application. Once this interview process is complete, the applicant brings the application back to their local Telecommunications Bureau at the Post Office where it is forwarded to the Ministry of Post and Telecommunications central office in Pyongyang. Once in Pyongyang, the application is then scrutinized once again by the MPS, likely through a liaison office embedded in the Post and Telecoms Ministry.[106]

The successful application is then forwarded to the Koryolink/Star division of Korea Post and Telecoms at which time a phone number, IMEI and IMSI data are assigned. This information is then forwarded to the MPS Records Registration office and most likely to the SSD. The application is transmitted back to the local Telecommunications Bureau office along with the phone number information, and the subscriber information is registered with the local Telecommunications Bureau, the local MPS Local Registration section, the SSD and neighborhood unit.

Initially after cell phone services were introduced, North Korean citizens applying for a handset and mobile service subscription had their applications approved at the provincial level, where they were also assigned the phone number and call plan. During the last three years, the central authorities in Pyongyang have closed this loophole and all applications are sent to the Ministry of Post and Telecommunications in Pyongyang. Part of this policy was a response to numerous incidents of corruption at the local level; officials at Telecommunications Bureaus were accepting bribes to approve an application.[107] It also was implemented to stop the practice of brokers obtaining multiple SIM cards and selling them to DPRK citizens with a separately obtained, non-networked (unconnected) handset, thus bypassing the application process.

The provincial and local levels of the MPS, through the People's Security Bureaus and People's Security Departments, also have dedicated Civil Defense sections. These Civil Defense sections utilize local People's Security officers, elements of the KPISF and local chapters of the Worker-Peasant Red Guards, the Young Red Guards and the DPRK's other reserve military training units. This is relevant to mobile phone usage as several defector media accounts and interviews explicitly identified members of reserve military training units as members of special task forces who crack down on the usage of cell phones, mobile devices and the distribution and consumption of "outside" news outlets and media resources.

Another front end of MPS organizational/institutional involvement with cell phone usage comes through the KPISF. The KPISF fulfills a number of guard and public safety missions by securing and protecting the DPRK's critical infrastructure.[108] Part of the KPISF's missions is the security of the television and radio towers, where a number of cell transmitters and base stations are housed, along with fiber-optic wiring, and the DPRK's fixed line telephone network. In addition to providing routine guard patrols and monitoring of the telecommunications infrastructure, KPISF personnel are involved in support missions as traffic control for the Ministry of Post and Telecommunications technicians and logistics personnel who are involved in the construction of new infrastructure and maintenance of existing sites. In addition, local People's Security officers also serve as guards and protection for post offices, where the Telecommunications Bureaus are located.

As part of its mission in protecting officials and institutions of the DPRK Government at the national, provincial and local levels, the MPS is responsible for the communications security and reliability of the telephone infrastructure between Pyongyang and provincial capital cities. This falls under the jurisdiction of the MPS Directorate of People's Security and the Central Organs Security Bureau, which link with the Guard Command, to fulfill this mission.

The MPS Investigation Bureau, both the one based at headquarters and those at provincial People's Security Bureaus and local People's Security Departments, likely have some access to citizens' call and text data from cell phones. In investigations, MPS investigators can request that the Ministry of Post and Telecommunications furnish dialed number recorder (commonly known as a pen registry) information including numbers called, time, date and length of calls MPS personnel, albeit not necessarily from the Investigation Bureau, can also engage in real-time geolocating and

monitoring of targeted cell phones.[109] MPS access to SSD's routine mass surveillance conducted via the CIB, however, is highly restricted and requires the approval of managers within MPS, authorization by the Central Prosecutor's Office and final approval by the SSD. Despite the common perception of the DPRK as a "police state," law enforcement personnel from the MPS are largely restricted from having unfettered access to cell phone user data. At the central and local levels, the MPS also maintains sections involved in counterintelligence and counterespionage, and basic surveillance functions (largely focused on state resources such as food, construction materials, wood and minerals). As with the Investigation Bureau, these MPS units can obtain cell phone user data and conduct small-scale real time surveillance, but are not reported or alleged to be involved in surveillance as part of their routine tasks.

## WPK PROPAGANDA AND AGITATION DEPARTMENT AND STATE CENSORSHIP ORGANIZATIONS

Along with the Organization Guidance Department (OGD), the Propaganda and Agitation Department (PAD) is one of the WPK's two "control tower" departments. PAD's mission is to publicize DPRK ideologies through news reports, media and the arts, and to promote the virtues of the leadership of the Kims and the monolithic ideological system (i.e., rule by the supreme leader or Suryong). One reason the OGD and PAD are called "control tower" departments is because organization and propaganda cadres exist throughout the North Korean political system - even in other WPK departments.

PAD has a number of subordinate sections that have policy and personnel controls over North Korean state news, media, arts and cultural organizations, as well as sections that produce and disseminate political education and ideological content that are used in Party Life. That is to say, it is both the producer/creator and the distributor of content.

Relevant to the use of cell phones and computers, and the consumption of external news and culture are the PAD Culture and Arts Section and the PAD Information Section. The PAD Culture and Arts Section links with the Ministry of Culture (MOC) under the DPRK Cabinet and is responsible for personnel affairs in the DPRK's national arts and cultural organizations, including music groups, theater companies, film studios, visual arts organizations, animation and video game studios, comic artists, and groups of fiction writers and poets.[110] The Culture and Arts Section focuses primarily on the producers, creators and authors of artistic and creative works, but also exercises control over the distribution of films, music and visual arts. It has personnel controls (appointment, promotion, demotion and dismissal), in coordination with OGD,[111] over those who work in these creative sectors - including the appointment of music directors, film producers, directors, screenwriters, actors and artists. PAD Culture and Arts Section personnel are appointed to these institutions and organizations in small teams (usually no more than five PAD employees), and have approval power at each phase of the creation and/or production process. Once a given artistic or cultural work has been completed, the PAD personnel then approve a final version that is submitted to the PAD Culture and Arts Section office for final approval before distribution or release.

PAD and MOC personnel are subjected to rigorous Party Life controls and some increased surveillance by SSD. Those working under the MOC at DPRK arts and culture organizations have relatively unfettered access to outside information and culture. This includes, for example, musicians and composers who can access and listen to foreign composers, singers, bands and orchestras through the Internet, as well as the music holdings at the Great People's Study House and the private digitized music collection of Kim Jong Il.[112] This also includes those who work in film and TV production and have ready access to VHS, VCD and DVDs of American, South Korean, Japanese and Chinese films and television programs. Due to their routine exposure to "foreign influence," "decadent" ideas and the like, these people are subject to basic party organization meetings every three days (as opposed to other basic party organizations, which are required to meet only once a week or once every 10 days) for intensive ideological programming and

indoctrination. In addition to the Party Life controls, people who work in creative fields largely reside in the same apartment buildings in and around Pyongyang. This enables their membership in the same neighborhood unit system, which intensifies the social controls and surveillance placed on them.

The PAD Information Section is responsible for personnel and policy controls over the DPRK's news, broadcasting and public information sectors. It is responsible for senior personnel appointments and policy controls over the Public Information Commission (PIC), which is subordinate to the DPRK Cabinet. The PIC controls the Korean Central News Agency (KCNA), which is the DPRK's sole state-owned news wire service. KCNA generates written news stories that are used in provincial DPRK newspapers and are syndicated on KCNA's Korean website (both .kp and formerly through KPM, a Japan-based syndicator of DPRK state media), and in KCNA's translated websites. KCNA and other DPRK state media outlets are subject to other censorship controls; leaving the PIC directly responsible for the administrative and technical aspects of publication, dissemination and distribution, but not editorial content. The PAD Information Section also disseminates announcements, statements and commentaries from the WPK, the DPRK Government or security organizations that are then conveyed by KCNA.

The PAD Information Section also manages personnel appointments to the Central Broadcasting Commission (CBC). Directly subordinate to the CBC are the DPRK's domestic broadcasting stations, which include radio through the Korean Central Broadcasting Station (KCBS) and Korean Central Television (KCTV). KCBS and KCTV have several channels under their control, such as Radio Pyongyang and the Mansudae TV Network. State broadcasters air films, television series, concert films, children's programs and talk shows produced by studios under the MOC or from the Party History Institute, and occasionally air foreign-produced content. KCTV's programming schedule is formulated and passed along to the CBC, which conveys it to the PAD Information Section, which approves it or returns it to the CBC with suggestions. KCBS airs radio dramas, children's programs, essays and editorials, and music. As with KCTV, KCBS formulates its programming schedule, which is passed along to the CBC, and then is sent to the PAD Information Section for approval.

News in the DPRK almost always originates with the editors and staff of KCNA, and from articles which appear in Rodong Sinmun (Workers' Daily) and Minju Choson. KCNA maintains news bureaus throughout the DPRK, located in provincial capitals, and also uses contributions from a network of journalists. KCNA is also used to distribute statements and other forms of communique from the DPRK government, elements of the KPA, workers' and social organizations and inter-Korean organizations.[113] KCBS radio news and the two regular news broadcasts on KCTV, derive their news items from KCNA reporting. KCTV merely supplies the required technical personnel, and audio-visual and transmission equipment, while utilizing KCNA reporting. KCNA also supplies the news copy read on the air by KCBS and KCTV, with minor alterations.

All news stories, whether originating from KCNA, Rodong Shinmun or Minju Shinmun, must be submitted to the Publication Guidance Bureau (PGB), the country's media censorship agency. The PGB's senior officials are appointed by PAD's director and deputy director and report daily to PAD (and most likely the Personal Secretariat). The PGB has censorship offices at the PIC, the CBC, KCNA, KCBS and KCTV, as well as at all publishing houses in the DPRK. It exercises editorial and content control over all publications originating in the DPRK (with the exception of marketing materials produced by joint venture companies). PGB is linked directly with SSD to protect state secrets and maintain continuity in how the DPRK's leadership is depicted. PGB uses a five-step publication process for long-form publications (books, education texts) and general interest news items from the conception of a written work to its final publication. In the DPRK's news business, the PGB has a shorter three-step process for efficient turnaround of news stories. A KCNA news article will generally undergo at least seven revisions before it is released.[114]

The PIC, CBC and PGB are all linked institutionally with the Ministry of Post and Telecommunications. The Ministry's post offices are responsible for delivering newspapers and magazines throughout the country, although there

are numerous reports of slow delivery. The Ministry's Telecommunications Bureau links with the PIC to provide text message alerts about certain news events and public safety information. Finally, the Ministry links to the CBC for the construction and maintenance of radio and TV antennae.

# WPK ORGANIZATION GUIDANCE DEPARTMENT

The WPK Organization Guidance Department (OGD), officially called the WPK Central Committee Organizational Leadership Department, is one of two core departments in the WPK Central Committee. All available interview data says that OGD has ultimate authority over Group 109, as well as other ministries and agencies tasked to monitor the distribution and use of cell phones, mobiles devices and computers in the country. In a general context, OGD's mission is to ensure the Suryong's dominance of the North Korean political system through WPK control over state and national security affairs, or officially, "establish the party's monolithic leadership and unity among party members and DPRK citizens."

The OGD's means of control and influence are exercised in three ways in DPRK society and political culture. First, the OGD controls the network of party organizations that exists throughout DPRK communities, production units, worksites and institutions. Through these party organizations, the central authorities can exert some control over local affairs. OGD does this through its control of what are called basic party organizations - party cells, primary party committees and branch party committees - which exist in neighborhoods, at agricultural sites and production units (factories, mines and the like). So for every neighborhood unit in the inminban system, there are party cells or a primary party committee to which some members of the neighborhood unit belong, with the basic party organization taking precedence over the neighborhood unit. Basic party organizations are the venue for what is called Party Life, which refers to a party members' knowledge and practice of ideology, the writings and teachings of the ruling Kims and the contributions the party member makes to his or her community and workplace. Party Life includes acts of self-critique in which the party member is first criticized by other members of the basic party organization and then the party member criticizes his or her own behavior and actions in the context of party ideology and the teachings and examples of the Kims. In recent years, the Party Life critique has included upbraiding party members for using their cell phones too often and texting too frequently.

Basic party organization meetings feature political education materials handed down by the central government that have focused on combatting outside foreign media and culture, and call for party members to use their mobile devices and computers in accordance with established state policies and statutes. One of the obligations of WPK members and basic party organizations is to educate party members and other citizens in party ideology and "fight against capitalism, feudalistic Confucianism, revisionism, dogmatism, flunkeyism, factionalism, provincialism, nepotism and non-Socialist phenomena."[115] The party members are charged with monitoring for these phenomena among non-party members within the local population.

Above basic party organizations are county and city WPK committees, and above those "lower echelon party organizations" are provincial WPK committees. At the lowest level, basic party organizations exert influence and control over the neighborhood units (which themselves link directly with SSD, which is controlled by OGD). At the county and city level, the WPK committees link to their respective county and city People's Committees; at the provincial level, the WPK provincial committee links to the Provincial People's Committee. At each of these levels, it is the WPK committee which assumes priority and precedence over the People's Committee. In short, the former issues instructions and guidance to the latter. Through these institutional relationships, the WPK and OGD have reliable channels through which they can monitor the DPRK's population and control local affairs. With regard to Group 109, especially, it is these basic party organizations that contribute personnel to reserve military training units, and the local and provincial party committees that control personnel to serve on Group 109 teams.

Another way in which the OGD manifests its control over the DPRK political culture is through personnel and guidance controls. Part of OGD essentially functions like a large, glorified human resources organization. Through the aforementioned basic party organization system, it collects information and creates highly detailed files on the professional and personal lives of the 3 million WPK members[116] and thousands of files on DPRK government and security personnel who are not members of the party. These files compile information from the MPS Public Registration's citizen records, evaluations made by party cadres (via basic party organizational life) and a variety of SSD surveillance reports. These files are then used by OGD personnel to determine whether someone can be appointed to a job in the party, state or security community, promoted or demoted.

The basic party organizations, the local and provincial party system and the political bureau and guidance officer system all constitute the third way OGD's power in the DPRK is manifested. At the top level of OGD is a staff of senior deputy (first vice) and deputy OGD directors. There are four to six senior deputy directors of OGD and at least a half dozen deputy directors who are some of the most powerful people in the country's political culture. Each of them has a series of security organizations, government ministries and state institutions in which they communicate policy and exercise personnel controls.

All survey findings presented in this paper are unweighted. That is, they are not adjusted to align with known characteristics of the target population. Given the limitations and sizable caveats associated with surveying refugees, defectors and travelers as a proxy for North Koreans, we felt it most appropriate to start with the raw data with all its bumps and warts rather than shaping the data in a way we are unable to prove is better representative of North Korea.

However, in an effort to further explore the validity of survey findings we have created several demographic weighting schemes based on the data from the 2008 UN Census of North Korea. Below we present a number of key media and communication indicators both unweighted and corrected for sex, age, province, individually and combined

## KEY METRICS WEIGHTED TO 2008 NORTH KOREA CENSUS DATA

| WEIGHTED BY | UNWEIGHTED | SEX | AGE | PROVINCE | COMBINED (AGE, SEX, PROVINCE) |
|---|---|---|---|---|---|
| Foreign Radio | 29% | 32% | 22% | 31% | 28% |
| Foreign TV (Direct) | 34% | 34% | 27% | 31% | 31% |
| Foreign DVD | 92% | 93% | 82% | 93% | 90% |
| Domestic Mobile Phone Ownership | 28% | 29% | 22% | 37% | 37% |

Base: n=350 North Korean refugees, defectors and travelers

# APPENDIX 4:
## SURVEY METHODS

## 2015 BBG NORTH KOREA REFUGEE, DEFECTOR AND TRAVELER SURVEY

Sample Design: Non-probability convenience sample of North Korean refugees and travelers in Yanbian Korean Autonomous Region, PRC with an additional booster sample of recent defectors in South Korea.

Sample size: N=350 adults (15+) (n=250 refugees/travelers, n=100 recent defectors)

Margin of error: Not applicable (as a non-probability sampling method was employed)

Data collection method: Face-to-face survey.

Fieldwork dates: March through July 2015

- Reflecting the demographics of North Korean refugee and defector populations more broadly, the sample contained a greater number of female respondents (65 percent) than male respondents (35 percent).
- As it is currently impossible to draw a nationally representative sample inside North Korea, these results should not be used to make generalizations or draw conclusions about populations inside North Korea or about North Korean refugees, defectors or travelers more broadly. This survey necessarily employs a non-probability convenience sample and the results are not statistically comparable across years. The results of this survey represent the views of these 350 refugees, defectors and travelers only.

As discussed in the body of the report, there are a number of novel and specialized features of domestically produced software for both desktop and mobile devices that are designed to allow the North Korean government to censor content, surveil users and ensure that the integrity of their systems is not compromised.

In the Red Star Operating System as well as the North Korean produced Android mobile operating systems, the signature system searches for signatures that certify the content is approved, and if it detects that no such signature is present, it deletes the file. The watermarking system appends unique identifiers to all files that interact with a device. Both systems target specific types of files; the Red Star software code reveals they search for the following file types.

| TYPE | FILE FORMAT |
|---|---|
| Data | dat. |
| Images | .gif, .jpg, .bmp, .png, .tif, .jpeg, .tiff |
| Documents and Readers | .doc, .pdf, .ppt, .xls, .chm, .djuv, .djv, .caj, .kdh, .teb, .nh, .caa, .docx, .xlsx, .pptx, .txt, .hwp, .pdg |
| Audio and Video | .mp3, .wav, .mpa, .wma, .asf, mp2, .rm, .rmv, .rmvb, .mpg, .avi, .vob, .mov, .wmv, .mp4, .swf, .flv, .3gp |
| Webpages and Archives | .htm, .html, .mht |

Annotations in the code indicate the software was designed primarily at the Korean Computer Center, but the following organizational email address domains are included in the code:

kut.edu.kp – Kim Chaek University

kcc.co.kp – Korean Computer Center

osandok.inf.kp; osd.inf.kp; chongbong.inf.kp – These are all domains for information centers tasked with developing IT products and software. Some of these information centers play key roles in the export of IT products. Osandok Information Center for instance has branch offices in China and Malaysia.[117]

# GLOSSARY

Analog TV broadcasts: The original television technology that relied on analog signals to broadcast audio and video. Analog TV has been replaced by digital TV in much of the world.

Arduous March: 고난의 행군. North Korean terminology for the serve famine period of the 1990's in North Korean. While assessments vary widely, even conservative calculations estimate hundreds of thousands of North Koreans starved after the collapse of the public distribution system for food rations.

Bluetooth: A wireless networking technology that can connect enabled phones, computers, and other electronic devices

Currency reform: Refers to the North Korean government's sudden revaluation of the North Korean currency that occurred in 2009. The revaluation was widely believed to be a punitive attempt to curb market activities that had emerged in the wake of the famine. Fallout from the revaluation prompted the government to execute then Worker's Party chief for planning and economy Pak Nam-gi. He was considered a scapegoat by many close observers.

Digital TV broadcasts: Digital television provides a higher resolution picture and sound fidelity than analog through the broadcast of digital signals; digital TV has been replacing analog television around the world

EVD player: Enhanced Versatile Disk player; a portable media device that can play media files from DVDs and micro storage devices. Often referred to in North Korea as "notel".

Feature phones: A class of mobile phones that preceded smartphones and have limited multimedia and network capabilities

Gruppas: North Korean terminology for specially-tasked government units Multiple gruppas have been formed and dispatched to crackdown on the distribution and consumption of unsanctioned media and information

Gwangmyong: Name of the North Korean domestic Intranet

Inminban: Neighborhood units to which every North Korean belongs

Intranet: A private network with restricted and contained access, in contrast to the wider Internet

KBS: Korean Broadcasting System, the national public broadcaster of South Korea

KCC: Korean Computer Center; a leading North Korean IT research institution founded in 1990

KCBS: Korean Central Broadcasting Station, the official radio station of North Korea

KCNA: Korean Central News Agency, the state news agency of North Korea.

Longwave radio: Transmits frequencies in the lower range of the radio spectrum which consists of frequencies from 3 Hertz (Hz) to about 300 Gigahertz(GHz). Longer wavelengths can travel greater distances for a given amount of power. They were used first in the earlier days of radio because less power was needed to send signals over long distances.

MBC: Munhwa Broadcasting Network, a major network in South Korea

Micro storage devices: Small portable devices that can carry large volumes of files; they include USB flash drives, SD cards, and TF cards (as opposed to, for instance, CDs or DVDs which are larger and carry less capacity)

Naenara: The intranet browser developed by the North Korean government

Notels/notetels: portable media players with attached screens made in China and used widely in North Korea which can read DVDs and micro storage devices. Also referred to as EVD player.

NTSC: A color encoding system for the analog television system that was used in most of the Americas as well as South Korea and Japan

Nodong Sinmun: Official newspaper of the Workers' Party

Orascom: An Egyptian mobile phone service in a joint venture with Koryolink in North Korea

PAL: A color encoding system for analog television used in most European and Asian countries
(not South Korea)

Red Star: Computer operating system developed by the North Korean government capable of censoring unsanctioned content

Shortwave radio: Transmits frequencies in the higher range of the radio spectrum which consists of frequencies from 3 Hertz(Hz) to about 300 Gigahertz(GHz). Many foreign radio broadcasts to North Korea rely on Shortwave.

Social mobilization: Regular community-level gatherings that North Korean citizens are mandated to attend where, for example, they perform public works of manual labor

SSL certificate: Authenticates the identity of a website and ensures secure communication between it and a browser

Terrestrial or broadcast TV: A broadcast signal that is transmitted by radio waves from the transmitter of a television station to a TV receiver with an antenna; the original technology used for television broadcasting (compare with satellite TV)

WeChat: Cross-platform chat and calling application developed in and used mostly in China.

Workers' Party: The sole ruling and founding political party in North Korea

1  The predecessor to this report, *A Quiet Opening*, is available at http://www.intermedia.org/wp-content/uploads/2013/05/A_Quiet_Opening_FINAL_InterMedia.pdf

2  "The GDP growth rate has run about 1 percent per year since Kim took office, compared to negative rates during many of his father's years" - *Who is Kim Jong Un,* http://www.nybooks.com/articles/2016/08/18/who-is-kim-jong-un/ 18 Aug 2016.  North Korea's annual GDP growth rate ranged from -1 percent to 6 percent in the years following the famine, contrasted with a consistently negative rate in the years leading up to it.  Source: data from Bank of Korea via tradingeconomics.com.

3  This sentiment is supported by others, e.g., Corrado, Jonathan, *North Korea's Propaganda Problem: Why the Hype Isn't Working*, Foreign Affairs, 13 March 2016

4  Freedom House Freedom of the Press Index 2016 https://freedomhouse.org/report/freedom-press/freedom-press-2016

5  Reporters with Borders, 2016 World Press Freedom Index https://rsf.org/en/ranking#

6  The August 3rd movement was originally a state-led effort increase the supply of consumer goods by producing goods outside of factories in the 1980's.  More recently 8.3 workers are those who are exempted from some or all official duties in order to make money in the private market, a portion of which is paid back to their employer and the state as "8.3 money". http://www.dailynk.com/english/read.php?cataId=nk01500&num=12171

7  The 2010 BBG Refugee and Traveler Survey was used as the basis the General Media Environment section in *A Quiet Opening*.

8  Williams, Martyn. *South Korea to continue analog TV near border*. North Korea Tech Blog. December 27, 2012. http://www.northkoreatech.org/2012/12/27/south-korea-to-continue-analog-tv-near-border.

9  ibid.

10  For instance: *North Korea intensifies shortwave jamming*. The SWLing Post Blog. March 22, 2016. http://swling.com/blog/2016/03/north-korea-intensifies-shortwave-jamming/

11  See *A Quiet Opening* for a complete discussion of the SEM models and results. http://www.intermedia.org/wp-content/uploads/2013/05/A_Quiet_Opening_FINAL_InterMedia.pdf

12  The smallest unit of political organization in North Korea is referred to as the inminban or people's committee. These neighborhood level units each have a leader who is responsible for dispersing guidance at the neighborhood level and reporting on community members to relevant authorities.

13  For example see: http://www.dailynk.com/english/read.php?cataId=nk01500&num=8094

14  The Daily NK has also reported the creation of Group 114 by Kim Jong Un in the wake of his Grandfather's Centennial celebration. This group is similarly tasked with cracking down on impure media and members are drawn from some of the same security agencies that supply personnel to Groups 109 and 118. http://www.dailynk.com/english/read.php?num=12441&cataId=nk01500

15  *Heightened Vigilance Against Illusions about Imperialists, Rodong Sinmun* (in Korean), March 23, 2008.

16  DPRK criminal statutes have been revised to include cell phones and portable data storage.

17  If enforced by the Ministry of People's Security and Central Prosecutor's Office, the penalty ranges from three to six years of "labor correction."

18  If enforced by the police and public prosecutors, the sentence is anywhere from two to seven years of hard labor.

19  The same media and materials itemized in Article 195 are used to train personnel in the North Korea's internal security and intelligence communities.

20  This carries a maximum penalty of three years of hard labor.

21  문성휘. 불안한 북, 주민 감시 조직 또 신설 Radio Free Asia. March 2, 2011. http://www.rfa.org/korean/in_focus/anti_socialism-03022011102338.html

22  Kang Mi Jin, *109 Team Out for Video Clampdown*. DailyNK. October 22, 2013. http://www.dailynk.com/english/read.php?cataId=nk01500&num=11103

23  The Kim Il Sung Youth League and Women's Union among others

24  Lee Sang Yong. *Residents Pull Plug on SK TV Dramas For Now*. Daily NK. October 20, 2014. http://www.dailynk.com/english/read.php?num=12441&cataId=nk01500

25  Lee Sang Yong. *Kim's Orders No Match for Bribes*. Daily NK. December 12, 2012. http://www.dailynk.com/english/read.php?num=12665&cataId=nk01500

26  A satirical program was aired recently lampooning both South Korean and U.S. policymakers Ahn, JH. *N. Korean TV airs SNL-style comedy mocking President Obama*. NK News. September 14, 2016. https://www.nknews.org/2016/09/n-korean-tv-airs-snl-style-comedy-mocking-president-obama/ and a new feature film, entitled *Story about my family*, was recently featured in North Korean media, of which an official said, "The film shows well noble spiritual world of the Korean youths."

27  Conversations with Dr Andrei Lankov of Kookmin University, in which he referenced what he believed to be improvements in the quality of North Korean domestic cultural production.

28  Williams, Martyn. *North Korean 3G Mobile Subscriptions Hit Half a Million*. PC World. May 20, 2011. http://www.pcworld.com/article/228282/article.html

29  While supply side statistics are likely to become much harder to obtain after Orascom was forced out of the market, the latest data from 2015 had subscribers at approximately 3 million. Williams, Martyn. *Koryolink said to have 3 million subscriptions*. North Korea Tech Blog. October 14, 2015. https://www.northkoreatech.org/2015/10/14/koryolink-said-to-have-3-million-subscriptions/

30  See Martyn Williams' reporting at the North Korea Tech blog. Williams, Martyn. *New cellular carrier is run by local ISP*, says source. North Korea Tech Blog. July 8, 2015.  http://www.northkoreatech.org/2015/07/08/new-cellular-carrier-is-run-by-local-isp-says-source/

31  ibid

32  For a detailed discussion of the registration process and aspects of pricing schemes see Kim Yonho's USKI report on the topic. Kim, Yonho. *Cell Phones in North Korea: Has North Korea Entered the Telecommunications Revolution?*. US-Korea Institute at SAIS. March 2014. http://uskoreainstitute.org/wp-content/uploads/2014/03/Kim-Yonho-Cell-Phones-in-North-Korea.pdf.

33  Orascom estimates in excess of 3 million accounts actually appear low when compared to the 28 percent domestic mobile phone ownership figure found in the survey.  However, factoring the emergence of the new network provider, the huge caveats with the data and lack of representativeness the demand and supply side figures suggest mobile penetration rates of roughly comparable orders of magnitude.

34 *N. Koreans' use of mobile phones, computers falls on-year in 2016: report.* Yonhap News Agency. August 23, 2016. http://english.yonhapnews.co.kr/northkorea/2016/08/23/78/0401000000AEN20160823010600315F.html This Seoul National University study, while relying on a small sample and measuring simply overall mobile usage rather than ownership of legal domestic mobile phones reinforces the notion that a substantial proportion of North Koreans half access to mobile phones.

35  The North Korean cellular network is reported to have three distinct networks. A normal domestic network over which normal data and international calling is not supported; a foreigners-only network which supports data and international calling but cannot call into the local North Korean network; and, according to a former Orascom employee, an elite network which has none of the other two networks' limitations but appears to be in use only by very top level elites.

36  This is a very small subgroup, and as such, any conclusions from the discussion of this sub-group should regarded with caution and not be over extrapolated.

37  It has been difficult to determine exactly when the mobile operating system that included the signature system was first introduced.  It may not have been rolled out nationwide simultaneously.  Most knowledgeable qualitative interviewees placed the date at somewhere in late 2013 or 2014.

38  As will be made evident later in the report, the signature system is simply the most visible user-facing portion of an advanced suite of software censorship and surveillance tools, which are written into both mobile and desktop operating systems.

39  Grunow, Florian, Niklaus Schiess, and Manuel Lubetzki. *Woolim: Lifting the Fog on DPRK's Latest Tablet* Image from 33C3 presentation slides pdf, slide 52. https://raw.githubusercontent.com/takeshixx/woolim-tools/master/Woolim_33c3.pdf

40  ibid.

41  This conclusion was reached through analysis of software on North Korean devices.  Even relatively recent departees of North Korea report having been able to send pictures taken on phones to one another.  Perhaps the restriction of

self-signed files to the device that created the file is still in the early stages of rollout or there may be some exemptions to self-signed files playability that have not yet been understood. If even file types commonly used for legitimate purposes, such as word processor or spreadsheet documents, cannot be shared between devices that would significantly limit the legitimate usefulness of such programs.

42   Adapted from Grunow, Schiess and Lubetzki diagram. https://raw.githubusercontent.com/takeshixx/woolim-tools/master/Woolim_33c3.pdf

43   Grunow, Florian, Niklaus Schiess, and Manuel Lubetzki. *Woolim: Lifting the Fog on DPRK's Latest Tablet* Image from 33C3 presentation slides pdf, slide 52. https://raw.githubusercontent.com/takeshixx/woolim-tools/master/Woolim_33c3.pdf

44   Examining multiple versions of North Korean software from different points in time across different versions can provide insights into the software development process undertaken by the North Korean government. There are telling differences between the software on devices examined for this report and that described by Grunow, Schiess, and Lubetzki

45   ibid.

46   Analysis of the Red Star operating system conducted by Florian Grunow and Niklaus Schiess, was extremely help in the writing of this section of the report and in guiding some of our own analysis of the same software. A video of their talk at the 32nd Chaos Communication Conference in December 2015 in which they present their findings on Red Star is available here: https://www.youtube.com/watch?v=KTBemKiSgWI&feature=youtu.be&t=22m3s

47   See appendix on software-based censorship for media file types that are searched for and censored.

48   The North Korean government has mandated that all computer users run Red Star OS. While it is unlikely that this has been successfully enforced at this point, assuming that the signature system works more effectively in more recent versions of Red Star mandating use of that operating system would make it much more difficult for users to access or share nonsanctioned content on their computers.

49   Grunow, Florian, Niklaus Schiess, and Manuel Lubetzki. *Woolim: Lifting the Fog on DPRK's Latest Tablet* Image from 33C3 presentation slides pdf, slide 52. https://raw.githubusercontent.com/takeshixx/woolim-tools/master/Woolim_33c3.pdf

50   ibid.

51   Analysis of the Red Star operating system conducted by Florian Grunow and Niklaus Schiess, https://www.youtube.com/watch?v=KTBemKiSgWI&feature=youtu.be&t=22m3s

52   ibid.

53   ibid.

54   Wagstaff, Jeremy and James Pearson. *Paranoid: North Korea's computer operating system mirrors it's political one.* Reuters. December 27, 2015. http://www.reuters.com/article/northkorea-computers-idUSKBN0UA0GF20151227

55   Further research that leverages code-stylometry could reveal interesting insights into the development of different controls used in these systems.

56   Chen, Cheng, Kyungmin Ko, and Ji-Yong Lee, *North Korea's Internet Strategy and its Political Implications,* The Pacific Review 23/5 (2010): 649–70.

57   Mansourov, Alexandre. *North Korea on the Cusp of Digital Transformation*, Nautilus Institute October 20, 2011, http://nautilus.org/wp-content/uploads/2011/12/DPRK_Digital_Transformation.pdf

58   Abt, Felix. *North Korea's Illicit Internet: A brief history of the internet in North Korea — and North Korea's private intranet.* June 11, 2016, The Diplomat. http://thediplomat.com/2016/06/north-koreas-illicit-internet/

59   Bruce, Scott Thomas. *Information Technology and Social Controls in North Korea,* January 28, 2014, KEI Academic Paper Series http://www.keia.org/sites/default/files/publications/2014_aps_scottbruce.pdf

60   Hansen, Robert. *North Korea's Naenara Browser: It's Weirder Than We Thought.* Whitehat Security. https://www.whitehatsec.com/blog/north-koreas-naenara-web-browser-its-weirder-than-we-thought/

61   Abt, Felix. *North Korea's Illicit Internet: A brief history of the internet in North Korea* — and North Korea's private intranet. June 11, 2016, The Diplomat. http://www.thediplomat.com/2016/06/north-koreas-illicit-internet/

62  Bruce, Scott Thomas. *Information Technology and Social Controls in North Korea*, January 28, 2014, KEI Academic Paper Series http://www.keia.org/sites/default/files/publications/2014_aps_scottbruce.pdf

63  Hayes, Bruce, Mardon 2011.

64  Mansourov, Alexandre. *North Korea on the Cusp of Digital Transformation*, Nautilus Institute October 20, 2011, http://nautilus.org/wp-content/uploads/2011/12/DPRK_Digital_Transformation.pdf

65  Bruce, Scott Thomas. *Information Technology and Social Controls in North Korea*, January 28, 2014, KEI Academic Paper Series http://www.keia.org/sites/default/files/publications/2014_aps_scottbruce.pdf

66  Chen, Cheng, Kyungmin Ko, and Ji-Yong Lee. *North Korea's Internet Strategy and its Political Implications,* The Pacific Review 23/5 (2010): 649–70.

67  Williams, Martyn, *Now Streaming: Intranet Protocol TV Service Arrives in North Korea*, 17 August 2016, 38 North.

68  https://www.nknews.org/2016/01/new-n-korean-tablet-imported-from-china-defector/; See the video advertisement at https://www.youtube.com/watch?v=ASw4pahbscA

69  김세진, *北 김정은, 개인 인터넷 허용 직접 지시/*July 11, 2016, MBC News http://imnews.imbc.com/replay/2016/nwtoday/article/4024453_19847.html

70  *N. Korean leader orders Internet use for some.*  Korea Times. 7/12/16 http://www.koreatimes.co.kr/www/news/nation/2016/07/485_209199.html

71  *Connection Denied: Restrictions on Mobile Phones and Information in North Korea* https://www.amnesty.org.uk/sites/default/files/final_en_connection_denied_full_report1.pdf

72  Republic of Korea, Ministry of Unification data

73  Kim, Soo-Yeon. *Defectors' remittance to N. Korea in spotlight amid sanctions.*"29 March 2016, Yonhap News. Figures from Database Center for North Korean Human Rights and NK Social Research.

74  ibid.

75  Park, Sokeel. *Social Change in North Korea: Current Trends and Future Prospects.* 2016, Liberty in North Korea.

76  For greater discussion of this topic see Sokeel Park's work on "Hotspots of Change".

77  Grunow, Florian, Niklaus Schiess, and Manuel Lubetzki. Woolim: *Lifting the Fog on DPRK's Latest Tablet* Image from 33C3 presentation slides pdf, slide 52. https://raw.githubusercontent.com/takeshixx/woolim-tools/master/Woolim_33c3.pdf

78  Ji Dagyum. N. Korean *'children should become five million nuclear bombs' – Children's Union*. NK News. August 29, 2016. https://www.nknews.org/2016/08/n-korean-youth-should-become-five-million-nuclear-bombs-childrens-union/

79  The Arduous March is the North Korean terminology for the serve famine period of the 1990's in North Korean during which hundreds of thousands of North Koreans starved after the collapse of the public distribution system for food rations.

80  The appendices on the telecommunications and security bureaucracies were researched and prepared primarily by Michael Madden whose other work can be found at 38 North and North Korea Leadership Watch.

81  The Guard Command or Supreme Guard Command is a special unit under the Korean People's Army in charge of overseeing the protection of the ruling Kim family.

82  There have been recent reports of the creation of a policy level Korean National IT Group (KNITG) but little is yet publically known about how the entity with function.

83  Chong Sang-yong *North Korean Colleges Switch Focus to Information Technology Education.* Yonhap News Agency (in Korean), August 16, 2001.

84  *Scientists and Technicians at the Information and Communications Institute Powerfully Accelerate Science Research.* Korean Central Television (in Korean), February 7, 2007.

85  As cited in the index of DPRK Science and Technology (Vol. 8, Issue 1), *Palmyong Kobo* (in Korean), February 28, 2008.

86  These may be the same production units, but DPRK state media appears to make a distinction.  According to one U.S. expert on the DPRK, one of these facilities has ties to the State Security Department.

87  Mun Ri-yong. *Basic Issues Arising in Establishing a Chuch'e-Oriented Information Industry Development Strategy. Kyo'ngje Yo'ngu,* Volume 3 of 2009 (in Korean), August 20 2009.

88  The SSD is referred to by varying English names in the literature, but refers to the entity known as Bowibu in Korean.

89  Open sources, interview data with DPRK, European and Japanese sources, and available defector interview data point to SSD as the top domestic signal intelligence agency in the DPRK.

90  This doesn't account for members of the core DPRK elite such as members of the Kim Family, senior diplomats and foreign trade officials who were using cell phones as early as the mid-1990s.  According to one DPRK source interviewed in 2009, he was using a mobile phone in western Europe as early as 1994.

91  Kang, Chol-hwan. *Chinese Cellular Phones Found in Border Area*. Chosun Ilbo. November 7, 2002

92  Derived from Bermudez, Joseph. *The Armed Forces of North Korea* (IB Tauris, 2001) and email data with US-based DPRK expert (2014-2016).

93  General U Tong-chuk was State Security's leading official for public purposes to conceal General Kim's transition into that job.

94  While General Kim Won-hong has close political and personal ties to Kim Jong Un, he holds these political positions because they are the requisite titles of the incumbent head of State Security.

95  Gause, Ken. *North Korea's House of Cards*. HRNK. 2015. https://www.hrnk.org/uploads/pdfs/HRNK_Gause_NKHOC_FINAL.pdf

96  Given the presence of SSD assets in China, particularly parts of China that border the DPRK, CIB might have light footprints in that country.  However, the DPRK and China have intelligence-sharing agreements that focus on the behavior and activities of DPRK nationals in the PRC so CIB's presence might be more of a liaison office than a significant listening post.

97  SSD involvement in monitoring and data collection related to cell phones is referenced in the North Korea Strategy Center's *North Korea Media and IT Infrastructure Report*. 2015

98  The Central Investigation Bureau can order provincial and local SSD offices to not investigate or detain a DPRK citizen.

99  This is the wiretapping process described in the body of the report by the former regional Ministry of Post and Telecommunications employee.

100  Kim Yong-jin, Park Hyon-min. *Inspect Those Collecting Nuclear Secrets and Transfer to Security Organs*. Daily NK. December 12, 2006

101  *Internal Surveillance Agencies Mushroom in DPRK*. Chosun Ilbo. March 4, 2011

102  The confusion is not the fault of the human sources.  MSC presence in investigations and surveillance, particularly on the DPRK-PRC border, of DPRK civilians has increased since 2009.  Additionally, SSD and MSC generally operate covertly within the country and have coordinated their activities during the last seven years.

103  For example, an SSD officer at a headquarters bureau or a provincial branch office cannot just confer with a colleague in a different bureau or in a county branch office; he cannot even go to the office next to his to discuss a problem or work matter.

104  While the process is presumably very similar for registration of newer Star service providers phones, less documentation is available.

105  Kim, Yonho. *Cell Phones in North Korea: Has North Korea Entered the Telecommunications Revolution?*. US-Korea Institute at SAIS. March 2014. http://uskoreainstitute.org/wp-content/uploads/2014/03/Kim-Yonho-Cell-Phones-in-North-Korea.pdf.

106  Ibid.

107  *North Korea Media and IT Infrastructure Report*. North Korea Strategy Center. 2015, and Kim, Yonho. *Cell Phones in North Korea: Has North Korea Entered the Telecommunications Revolution?*. US-Korea Institute at SAIS. March 2014. http://uskoreainstitute.org/wp-content/uploads/2014/03/Kim-Yonho-Cell-Phones-in-North-Korea.pdf.

108  This usage of "critical infrastructure" is based on the definition used by the U.S. Department of Homeland Security.

109  Michael Madden interview with North Korean defector.

110  North Korea Handbook. Yonhap News Agency. 2003.

111  OGD's personnel controls in the news and culture section are almost always advisory, and OGD does not have

the ultimate personnel authority that it enjoys in other government, security and economic sectors.  OGD's power over PAD and MOC personnel comes through the party organization and Party Life controls.

112   Kim Jong Il had an extensive music collection which included Korean folk songs, classical and pop music by Korean and Japanese artists, Russian music and a lot of Western popular music that included The Beatles, Frank Sinatra and Elvis Presley.  The late leader had an extensive collection of Elvis Presley recordings.  Because Kim Jong Il's formative career and his personal interest was in music and filmmaking, he made these works readily available to people working the music and film sector.

113   *North Korea Handbook*. Yonhap News Agency. 2003.

114   ibid.

115   From the "Basic Party Organizations" entry on North Korea Leadership Watch based on the last available copy of the WPK Party Charter (in Korean), 2012. https://nkleadershipwatch.wordpress.com/the-party/

116   OGD is also said to have detailed files on a vast number of non-party DPRK citizens.

117   Correspondence with North Korea scholar at Kyungnam University's Graduate School for North Korean Studies. See also: http://fluxcoil.net/software/red_star_3.0