

# MPA Study on Site Blocking Impact in South Korea

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## EXECUTIVE SUMMARY

In 2014 and 2015, at the request of rights holders, the Korean Communications Standards Commission (KCSC) authorized blocks targeting a total of 106 infringing sites including 77 peer-to-peer (P2P) downloading sites during August 2014 (Wave 1), November 2014 (Wave 2), and June 2015 (Wave 3).

This study assesses the impact of site blocking in those three waves on two levels: Level 1 investigates user activity at blocked sites and Level 2 investigates user activity at all sites used for piracy.

The Level 1 impact was clear: visits to blocked sites had declined on average 90% as of three months after a block (97% after Wave 1, 93% after Wave 2 and 79% after Wave 3).<sup>1</sup>

The 2014/2015 site blocking achieved wider impact on piracy (Level 2) after the third block.

- Total visits to piracy sites<sup>2</sup> declined following each wave of site blocking, with the greatest decline after Wave 3, as measured three months after the block compared to one month prior to the block.
- Significance testing confirms a 15% decrease in total piracy visits after Wave 3 (at a 95% confidence level), the wave with the largest number of sites blocked (62). This test compared the average of visits in the months before all three waves to the months after each wave.<sup>3</sup>
- The decline in total piracy site visits was driven by P2P, the most heavily blocked category (77 sites across all three waves); visits to P2P sites showed a 51% decline as of three months after Wave 3, compared to one month before.

Note that this impact assessment covers both PC and mobile platforms.

- In July 2014, one month before the first block, the percent of unduplicated PC audience accessing blocked sites (15.5%) exceeded that for mobile (4.9%).
- Based on the list of sites measured, South Korean users on both PC and mobile platforms concentrated their activity at P2P sites: more than 60% of all piracy visits occurred at P2P sites as of one month prior to the block.

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<sup>1</sup> The decline in visits after Wave 3 was limited by continued access to tvzil.com, which was accessible due to technical limitations.

<sup>2</sup> See Appendix B for a summary of the data source and site list development.

<sup>3</sup> A two sample t-test for statistical significance was implemented to calculate upper and lower limits for the average trend in total piracy audience, using a 95% confidence interval from the *t* distribution.

## BACKGROUND

**Introduction:** Site blocking refers to efforts by Internet Service Providers (ISPs) to block internet users' access to infringing websites, usually in response to legislation or a court order requiring the action. While the immediate and obvious intended effect of a site blocking action is to reduce use of the blocked site(s), including through workarounds (Level 1), the broader objective is to reduce use of piracy sites within the affected category (e.g. peer-to-peer) and overall (Level 2), so that users do not simply migrate from one form of piracy to another, and more importantly, to cause an increase in use of legal sites (Level 3).

To develop a site blocking program with the greatest potential impact the actions should be both broad enough to include the most popular sites and persistent, where many infringing sites are targeted in waves so that users searching for alternatives reach other pirate sites that have also been blocked. In addition, participating ISPs should represent a majority of the online population.

**Prior Research:** Published research has confirmed the impact of site blocking on user behavior. A study by Danaher, Smith and Telang concluded that the U.K. site blocking effort targeting 19 sites in October 2013 led to an increase in legal consumption by U.K. users of the blocked sites.<sup>4</sup> Users of the blocked sites increased their usage of legal streaming sites by 12% in the three months following the blocks, findings consistent with earlier research noting an increase in legal site usage after the Megaupload site was shut down.<sup>5</sup> The effect on legal sites was not confirmed for the 2012 site block against a single site, ThePirateBay, leading Danaher, et al to conclude that it is the persistent blocking of a number of piracy sites that will cause users of the blocked sites to migrate to legal channels.

**Objective of This Study:** The Korean Communications Standards Commission (KCSC) authorizes regular blocks targeting sites with copyright-infringing and other content (e.g., pornography). Requests from rights holders are reviewed semiannually by KCSC, as mandated by South Korean copyright law. From August 2014 through June 2015, KCSC authorized blocks applying to all ISPs, including fixed line and mobile, targeting a total of 106 infringing sites, which included 77 peer-to-peer (P2P) sites. Blocking orders were implemented for 18 sites in August 2014 (Wave 1), for 26 sites in November 2014 (Wave 2), and for the largest number, 62 sites, in June 2015 (Wave 3). All ISPs complied.

This report assesses the impact of these three 2014-2015 site blocks in South Korea, which included some popular sites among South Korean users (torrentgun.net, 4shared.com, togoon.com and hi-bogo.net), and cumulatively affected sites in use by 19.1% of South Korean PC and mobile Internet users as of one month prior to the first block. The reach of these sites suggest that impact will be measurable.<sup>6</sup>

The blocking actions are assessed for evidence of sustained impact on traffic to the individual sites (Level 1) and differential impact on PC and mobile users using Nielsen KoreanClick data.<sup>7</sup>

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<sup>4</sup> Danaher, Smith, and Telang, "The Effect of Piracy Website Blocking on Consumer Behavior" (May 29, 2015). Available at SSRN: <http://ssrn.com/abstract=2612063>. The authors developed a user segment analysis to measure Level 3 impact.

<sup>5</sup> Danaher and Smith, "Gone in 60 seconds: the impact of the Megaupload shutdown on movie sales." *International Journal of Industrial Organization* 33 (2014): 1-8.

<sup>6</sup> Although there were waves of site blocking later, in August and September 2015, the sites affected were not popular enough to drive the post-Wave 3 trend.

<sup>7</sup> The data source is described in more detail in Appendix B.

We also evaluate users’ activity before and after each block to determine whether users reduced visits to piracy sites (Level 2), also using Nielsen KoreanClick data. The assessment of total visits to piracy sites is based on the list of sites developed as described in Appendix B.<sup>8</sup>

This report does not assess Level 3 impact due to lack of sufficient data.

**Table 1: Sites Blocked in South Korea, August 2014-June 2015**

Wave	Timing	No. Sites	Sites blocked
1	August 2014	18	4shared.com, btmoa.com, funshion.com/fun.tv, playzoa.com, tcafe.net, tnori.us, togoon.com, tohaja.net, tonawa.net, torinee.net, torrent777.com, torrentbada.com, torrentgun.net, torrentkg.com, torrentmr.com, totorg.com, ttox.net, tv0u.com
2	November 2014	26	4shared-china.com, bamizoa.com, bitsnoop.com, cloudzoa.net, hi-bogo.net, mp30u.com, mytcafe.com, sudazoa.com, sudazoa.net, tcafez.com, tfreeca.com, tnori.kr, tnori.org, togoons.com, tohari.com, torenzoa.info, torinee.org, torrentbom.com, torrentby.net, torrentby.us, torrentcup.net, torrentdown.net, torrentoa.com, totsky.com, tvday.net, tvzil.co.kr
3	June 2015	62	abctb.net, bamizoa.net, bananatb.com, bananatb.net, bbtb.kr, chakantv.co.kr, chakantv.net, chakhantv.co.kr, chakhantv.com, chosuntv.net, cloudzoa.info, ftb.kr, gongwon.net, gwtorrent.com, happitv.co.kr, kgbtv.net, kgtv.co.kr, liveday.net, mblaq.net, tcafe.info, tcafev.com, tcafex.com, tcafez.net, tfreeca.org, tfreeca.us, thepiratebay.org, thepiratebay.se, thepiratebay.to, tmong.info, tnori.net, tobogo.net, togle.info, togoon.org, togoonz.com, torinee.info, torrent82.com, torrentdada.com, torrentdada.net, torrentdn.com, torrenters.com, torrentgogo.com, torrentgogo.net, torrentman.net, torrentme.net, torrentmr.net, torrentred.com, torrentred.net, torters.com, tosarang.net, tozoa.info, tvzil.com, tvzil.kr, tvzil.us, tzoa.info, ubtoz.com, uptv.co.kr, wmovie.net, wonzoh.com, xdm.co.kr, xkm.kr, ychannel.net, yumdisk.com

**Impact Across Platforms:** For the first time, this impact assessment covers both PC and mobile platforms. The 8.5M PC users accessing the websites being measured in our analysis comprised the larger proportion of all users at these websites than the 2.4M mobile users, yet the mobile user number is not insignificant given that the mobile number doesn’t include dedicated mobile applications or content viewed on other types of devices (Smart TVs). In July 2014, one month before the first block, the unduplicated percent of PC users visiting blocked sites was 15.5%, compared to 4.9% for mobile users.

<sup>8</sup> As noted in Appendix B, while there are potential limitations to the list, comparison of the list used in this analysis with sites blocked in South Korea in subsequent waves and current sites used for online piracy in South Korea suggest that this analysis covers the popular sites used for online piracy during the period of analysis and that the coverage of the list likely stayed consistent within the analysis period.

**Table 2: % of Unduplicated South Korean Internet Audience to Blocked Sites, 1 Month Pre-Block**

Platform	Wave 1	Wave 2	Wave 3
Mobile	4.9%	4.4%	3.4%
PC	15.5%	14.6%	13.5%

Observed usage patterns of all the piracy sites being measured in our analysis did not vary much by platform. Based on the list of piracy sites measured, South Korean users on both PC and mobile platforms concentrated their piracy activity at P2P sites: more than 60% of all piracy visits occurred at P2P sites as of one month prior to the block. Interestingly, mobile users made heavier use of host sites (ranging from approximately 6% to 16%) than PC users (ranging from approximately 1% to 2%).

**Table 3: % of All South Korean Piracy Visits, 1 Month Pre-Block**

Wave	P2P		Link		Host	
	PC	Mobile	PC	Mobile	PC	Mobile
1	62.8%	65.2%	35.1%	19.1%	2.1%	15.7%
2	65.4%	73.9%	33.3%	14.8%	1.3%	11.3%
3	63.8%	72.5%	35.1%	21.5%	1.1%	6.0%

## LEVEL 1: IMPACT ON BLOCKED SITES

### Blocked Site Rankings

Of the sites blocked in 2014, 22 ranked among the top 50 sites used for online piracy in South Korea one month before the block, where ranking was based on site visitors,<sup>9</sup> including 11 of 18 sites blocked in August and 11 of 26 sites blocked in November. The majority of the blocked sites were P2P sites, with 16 blocked in August and 24 blocked in November.

**Table 4: South Korea Blocked Sites – Ranking Comparison**  
**Wave 1/Wave 2**  
*(Nielsen KoreanClick Data)*

SITE	VISITORS		RANK	
	1 month prior to block	3 months after block	1 month prior to block	3 months after block
<b>August 2014 Block</b>				
TORRENTGUN.NET	2,338,348	49,837	1	54
TOGOON.COM	1,572,680	3,652	3	86
4SHARED.COM	1,538,817	345,467	4	23
TCAFE.NET	1,044,404	268,777	7	26
BTMOA.COM	429,058	28,300	20	62
TORRENT777.COM	347,168	-	22	-
TOHAJA.NET	334,270	-	23	-
TORRENTKG.COM	234,152	-	27	-
TORRENTMR.COM	218,071	-	28	-
PLAYZOA.COM	158,456	6,463	31	83
TORINEE.NET	78,310	-	40	-
TOTORG.COM	31,751	-	52	-
TTOX.NET	-	948	-	90
<b>November 2014 Block</b>				
HI-BOGO.NET	1,573,091	22,443	2	57
TOHARI.COM	1,495,566	9,826	3	70
TORRENTCUP.NET	1,326,026	34,142	4	50
TVZIL.CO.KR	1,107,976	37,403	5	48
BITSNOOP.COM	1,033,863	117,180	7	33
TVDAY.NET	745,870	-	9	-
TFREECA.COM	492,452	80,953	18	41
TORRENTBY.NET	281,760	6,361	24	77
TORRENTBY.US	195,538	1,390	32	95
4SHARED-CHINA.CO	123,553	4,107	36	87
TORINEE.ORG	89,572	-	42	-
MP30U.COM	32,390	-	56	-
TORRENTBOM.COM	18,802	5,454	61	80
TORRENTDOWN.NET	16,503	-	64	-
TORENZOA.INFO	4,138	-	81	-
TOTOSKY.COM	1,875	-	86	-
BAMIZOA.COM	-	4,853	-	85
CLOUDZOA.NET	-	9,524	-	71

<sup>9</sup> See Appendix B for a summary of the site list development and the sites with data available from Nielsen KoreanClick.

Of the sites blocked in June 2015, 20 ranked among the top 50 in South Korea one month before the block. Again, P2P sites comprised the majority, 37 sites of 62 total.

**Table 5: South Korea Blocked Sites –Ranking Comparison**

**Wave 3**

*(Nielsen KoreanClick Data)*

SITE	VISITORS		RANK	
	1 month prior to block	3 months after block	1 month prior to block	3 months after block
<b>Sites Ranking in Top 75, May 2015 Block</b>				
TORRENTDN.COM	2,532,634	52,243	1	36
TOBOGO.NET	1,378,273	2,525	2	90
TORRENTGOGO.NET	1,048,045	40,003	4	40
TOSARANG.NET	964,098	91,848	5	28
TORTERS.COM	904,251	134,862	6	24
TORRENTERS.COM	846,495	246,189	7	16
TVZIL.COM	774,254	1,573,142	8	2
TFRECA.US	400,141	-	19	-
TCAFEX.COM	347,675	26,990	21	51
TVZIL.KR	280,895	1,261	22	98
TORRENT82.COM	272,411	35,182	23	42
WONZOH.COM	212,025	58,827	27	33
TVZIL.US	204,360	32,257	28	47
TCAFEZ.NET	196,280	4,073	30	83
GONGWON.NET	186,162	831	31	99
GWTORRENT.COM	181,202	-	32	-
TOGOON.ORG	145,443	-	34	-
MBLAQ.NET	100,768	-	41	-
TORRENTGOGO.COM	75,146	9,315	45	68
TORINEE.INFO	72,751	-	46	-
ABCTB.NET	56,011	-	51	-
TCAFEZ.COM	52,591	7,908	53	74
TCAFEV.COM	45,546	22,580	55	54
TORRENTMAN.NET	41,975	11,663	57	64
CLOUDZOA.INFO	35,832	-	62	-

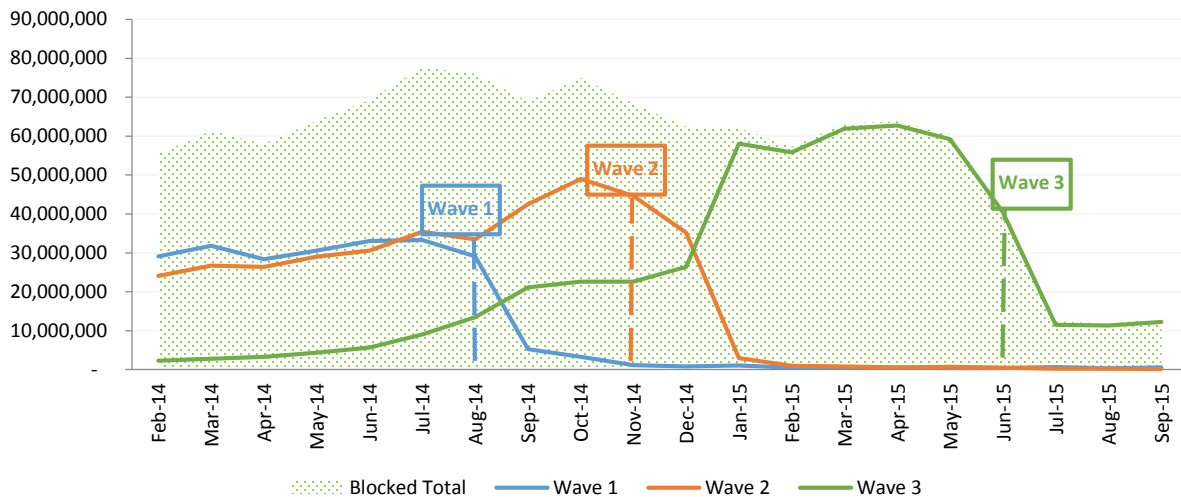
All but one of the blocked sites dropped in rank three months after the blocks. The popular site tvzil.com rose in rank. The site was unblocked and accessible due to technical limitations in blocking https.

## Traffic to Blocked Sites

The evidence for visits confirms a substantial post-block reduction in activity at the blocked sites. Visits to blocked sites from PC and mobile users declined on average 90% in the three months following each blocking wave. For Wave 1, visits to the blocked sites decreased by 97% from July to November 2014. Wave 2 sites declined by 93% from October 2014 to February 2015 and Wave 3 sites declined by 79% from May to September 2015. The decline in visits to blocked sites after Wave 3 was more limited than earlier waves by continued access to tvzil.com by both PC and mobile users, where visits increased from 2.4M in May 2015 to 9.6M in September, due to technical limitations in blocking https.

### South Korea: Visits to Blocked Sites

(Nielsen KoreanClick data)



Though the mobile data shows more variability overall due to smaller sample size, the decline in traffic was consistent for users on both PC and mobile platforms.

**Table 6: South Korean Visits to Blocked Sites, 3 Months Post-Block Compared to 1 Month Pre-Block**

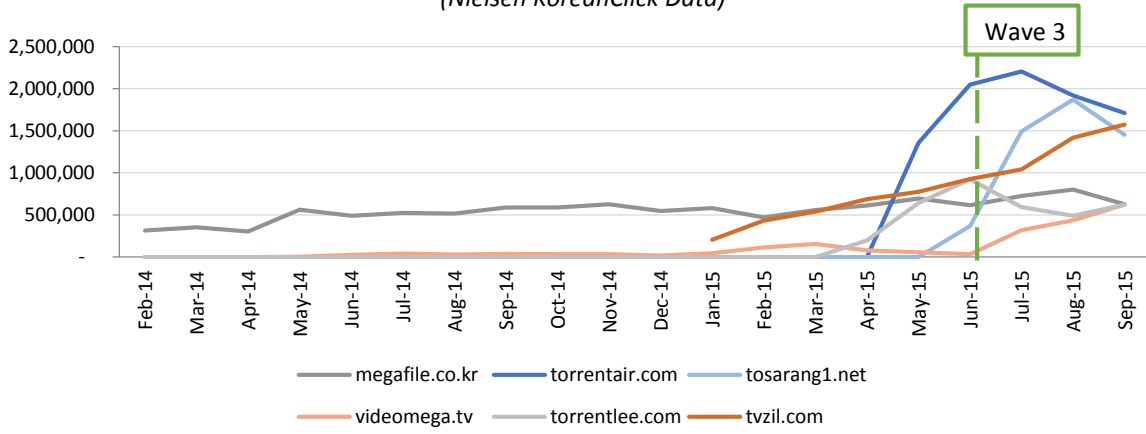
Platform	Wave 1	Wave 2	Wave 3
PC & Mobile	-97%	-93%	-79%
PC	-97%	-92%	-80%
Mobile	-94%	-99%	-77%

After each wave of blocking, key migration sites benefiting from new visitors emerged, including mirror sites set up to circumvent the blocks. Mirror sites were heavily targeted for blocking in subsequent waves, especially in November 2015.

After Wave 1, visitors to torrentbest.net increased, reaching a peak of 1.8M in January 2015, before declining and subsequently being blocked in September 2015. Four sites that gained popularity immediately after Wave 1 (torrentcup.net, hi-bogo.net, tvday.net and tohari.com) were included in Wave 2. Seven sites popular after Wave 2 were targeted in Wave 3 (torrentdn.com, tobogo.net, torrentgogo.net, tosarang.net, torters.com, torrenters.com, tvzil.com). After Wave 3, visitors to tvzil.com,

targeted in Wave 3, increased from fewer than 1M visitors in May 2015 to more than 1.5M in September, due to implementation limitations described earlier.

**South Korea: Visitors, Key Potential Migration Sites After Wave 3**  
(Nielsen KoreanClick Data)





## LEVEL 2: IMPACT ON TOTAL PIRACY

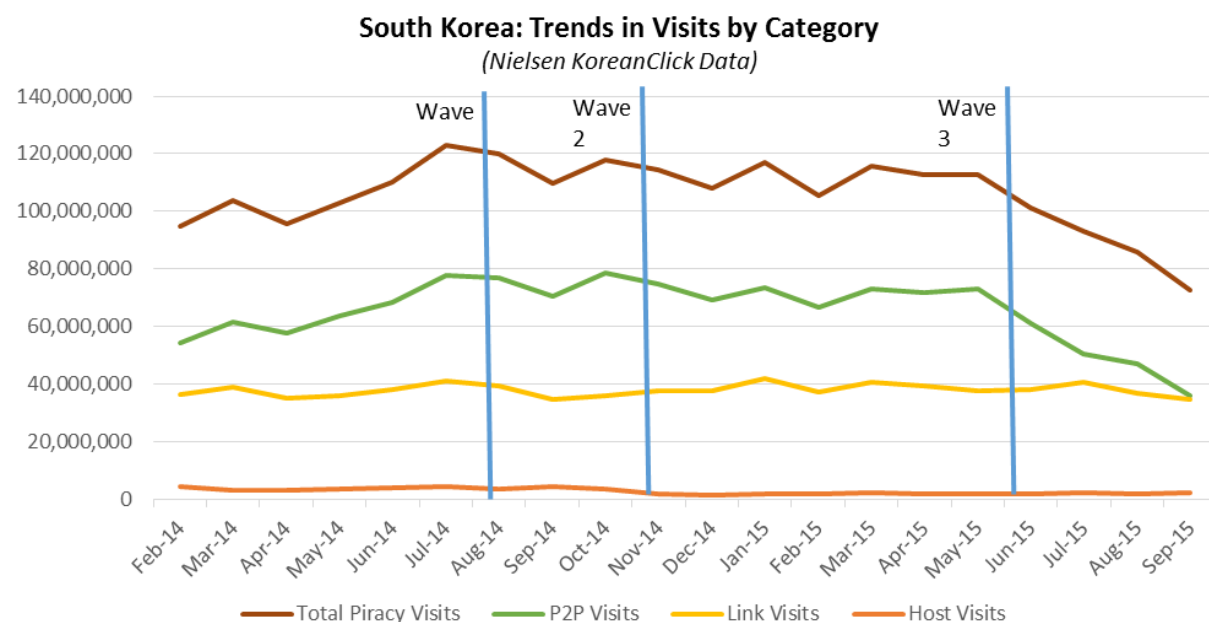
### Impact on Piracy Levels

Total visits to piracy sites in South Korea decreased following each wave of site blocking: a decline of 7% after Wave 1, 10% after Wave 2 and 36% after Wave 3, measured from three months after the block compared to one month prior to the block. The assessment of total visits to piracy sites is based on the list of sites used for online piracy, developed as described in Appendix B.<sup>10</sup>

The decline in visits to P2P sites, the most popular category of sites used for online piracy in South Korea and the predominant category blocked (77 of the 106 sites targeted for the blocked in the three waves were P2P sites), drove the trend. Visits to P2P sites declined by 15% for Wave 2 and 51% for Wave 3.

**Table 7: % Change in South Korean Visits by Category (PC & Mobile)  
3 Months Post-Block Compared to 1 Month Pre-Block**

Wave	Total Piracy Visits		P2P Visits		Link Visits		Host Visits	
	Prior After	% Change	Prior After	% Change	Prior After	% Change	Prior After	% Change
1	123,053,083	-7%	77,608,584	-4%	40,994,195	-8%	4,450,304	-60%
	114,316,510		74,820,803		37,712,080		1,783,627	
2	117,933,592	-10%	78,665,199	-15%	35,908,770	4%	3,359,623	-50%
	105,652,364		66,639,439		37,316,490		1,696,435	
3	112,571,070	-36%	73,055,741	-51%	37,553,271	-8%	1,962,058	4%
	72,585,264		35,824,046		34,725,194		2,036,024	



<sup>10</sup> While there are potential limitations to the list, comparison of the list used in this analysis with sites blocked in South Korea in subsequent waves and current sites used for online piracy in South Korea suggest that this analysis covers the popular sites used for online piracy during the period of analysis and that the coverage of the list likely stayed consistent within the analysis period. Although some sites were blocked in August and September 2015, they were not popular enough to drive the post-Wave 3 trend.

As noted earlier, the mobile data shows more variability overall due to smaller sample size; however, the decline in visits for mobile was more pronounced than for PC, particularly after Wave 3 (-48%).

**Table 8: % Change in Total South Korean Piracy Visits by Platform, 3 Months Post-Block Compared to 1 Month Pre-Block**

Platform	Wave 1	Wave 2	Wave 3
PC & Mobile	-7%	-10%	-36%
PC	-7%	-10%	-34%
Mobile	-4%	-15%	-48%

**Significance Testing the Impact on Total Piracy**

A two sample t-test assuming equal variance was applied to assess differences in total piracy visits for each site blocking wave, relative to the pre-block period. Statistical tests compared monthly averages in total piracy visits in the months prior to all three waves (pre block) to the months after each wave (post block) using standard statistical methods. Further, a 95% confidence interval using a t-statistic was constructed to confirm the statistical test. Each post-block period is compared to the pre-block period to determine if there was a statistically significant difference in total piracy visits.

**Table 9: t-Test: Two-Sample Assuming Equal Variances**

	<i>pre-Block</i>	<i>Block 1</i>	<i>Block 2</i>	<i>Block 3</i>
Mean	9,430,953	9,507,498	9,177,709	8,015,442
Standard Deviation	428,757	289,577	255,957	352,696
Observations	7	3	7	3
df (pooled)		8	12	8
t Stat		-0.27832225	1.34179597	4.990156541
P(T<=t) two-tail		0.78782333	0.204501168	0.001065859
Significant Difference		No	No	Yes
95% CI	(9.03, 9.83)	(8.79, 10.23)	(8.94, 9.41)	(7.14, 8.89)

The test confirms a statistically significant decrease in piracy visits following Wave 3. After Wave 3, the average total piracy visits was 8M, compared to 9.4M visits before the blocks began. The difference in means equates to a 15% decline in total piracy visits.<sup>11</sup>

Further investigation using the same statistical methods determined that Wave 3 averaged smaller mean total piracy visits than Waves 1 and 2. Total piracy levels after wave 3 were lower than those after waves 1 and 2 with at least 95% confidence. This confirms that total piracy visits after Wave 3 were not only lower than the pre block period, but also lower than the months after the previous waves.

<sup>11</sup> The decline of 15% is based on the mean total piracy visits in the pre-block (9.4M) and the mean total piracy visits after block three (8.0M). Whereas most of the report uses one month prior and three months after the block in a point-to-point measurement, the 15% decline is based on averages.

We could not reject the null hypothesis that total piracy visits after Wave 1 blocks was equivalent to visits before the blocks, implying that users largely substituted to other piracy sites after Wave 1. After Wave 2, total piracy visits were about 2.5% lower than before the blocks started, though this finding is only statistically significant at the 80% confidence level (implying a 20% possibility that this difference is due to statistical chance). Thus it appears that the second wave of blocks began to lower total piracy, but not nearly as much (or with as much certainty) as Wave 3.

## CONCLUSIONS

The Level 1 impact was clear: visits to blocked sites declined on average 90% as of three months after a block (97% after Wave 1, 93% after Wave 2 and 79% after Wave 3).<sup>12</sup>

The 2014/2015 site blocking achieved wider impact on piracy (Level 2) after the third block.

- Total visits to piracy sites<sup>13</sup> declined following each wave of site blocking, with the greatest decline after Wave 3, as measured from a point three months after the block compared to one month prior to the block.
- Significance testing confirms a 15% decrease in total piracy visits after Wave 3 (at a 95% confidence level), the wave with the largest number of sites blocked (62). This test compared the average of visits in the months before all three waves to the months after each wave.<sup>14</sup>
- The decline in total piracy site visits was driven by P2P, the most heavily blocked category (77 sites across all three waves); visits to P2P sites showed a 51% decline as of three months after Wave 3, compared to one month before.

This impact assessment covers both PC and mobile platforms.

- In July 2014, one month before the first block, the percent of unduplicated PC audience accessing blocked sites (15.5%) exceeded that for mobile (4.9%).
- Based on the list of sites measured, South Korean users on both PC and mobile platforms concentrated their activity at P2P sites: more than 60% of all piracy visits occurred at P2P sites as of one month prior to the block.

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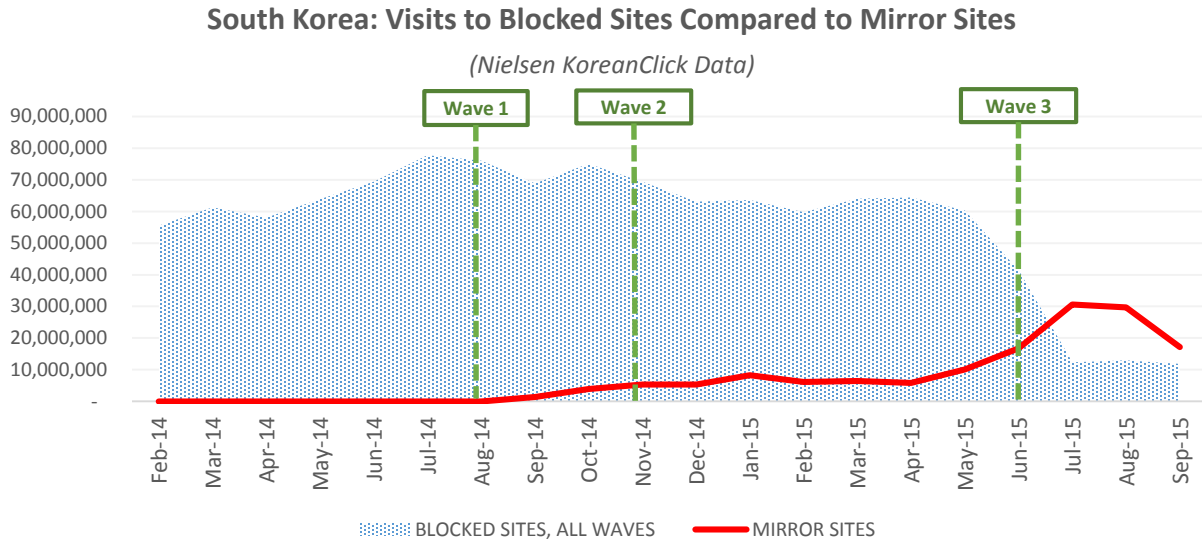
<sup>12</sup> The decline in visits after Wave 3 was limited by continued access to tvzil.com, which was accessible due to technical limitations.

<sup>13</sup> See Appendix B for a summary of the data source and site list development.

<sup>14</sup> A two sample t-test for statistical significance was implemented to calculate upper and lower limits for the average trend in total piracy audience, using a 95% confidence interval from the *t* distribution.

## APPENDIX A: MIRROR SITES

Mirror sites provide a workaround for users seeking to access blocked sites. Traffic to mirror sites increased around the Wave 3 site blocking; however the majority of the popular mirror sites driving this trend were blocked in subsequent waves after Wave 3 (especially in November 2015).



**Table A.1: South Korea, Mirror Sites Driving the Trend After Wave 3**

Site	Blocked	Visits (M), Aug. 2015
torrenters.net	Aug-15	1.2
tosarang1.net	Sep-15	12.7
torrentair.com	Nov-15	6.3
Torrentbest.net	Sep-15	3.9
tcafen.com	Aug-15	3.9

This data analysis is based on 18 mirror sites for which Nielsen had data available. Many of the mirror sites where no data was available appeared as temporary workarounds and did not attract much traffic.<sup>15</sup>

<sup>15</sup> This finding is based on site specific research at [www.alexa.com](http://www.alexa.com) for each of the sites where Nielsen data was not available.

## APPENDIX B: DATA SOURCE & METHODOLOGY

### Nielsen KoreanClick

Nielsen KoreanClick monitors the online activity of 12,000 representative South Korean internet users, including 12,000 PC and 9,000 Mobile users. A stratified sampling method is used to accurately represent online activity for users between the ages of 7 and 69 on personal computers, both at home and at work, and on mobile phones using the Android operating system.

Nielsen's panel data provides a passive measurement of all PC and mobile activity, detecting which activity is "in focus" (i.e. being undertaken onscreen). When a web page or application is minimized, no activity is recorded. For applications, the system can understand who uses a particular application and for how long, but it is not able to determine what is happening inside the application. Any person visiting the same website or using the same application more than one time in the same month is only counted once.

### Site List for Analysis

For the purpose of this analysis, MPA created custom analysis categories to measure online piracy activity for P2P download, link and host sites, using the following approach:

- Sites targeted for blocking as authorized by KCSC
- Top 10,000 sites from the Google Transparency Report (<http://www.google.com/transparencyreport/>), with the largest number of URL removal requests
  - Excluding sites with only adult, music, games, anime, UGC and eBook content
  - Including sites with any TV and/or movie content
  - Categorized by P2P download, link, or host site
- Supplemented by other published sources
  - <http://www.chillingeffects.org>
  - "2014 Out-of-Cycle Review of Notorious Markets," United States Trade Representative, March 5, 2015
  - "Good Money Still Going Bad: Digital Thieves and the Hijacking of the Online Ad Business," Digital Citizens Alliance, May 2015

While there are potential limitations to the list if there are omissions, comparison of the list used in this analysis with sites blocked in South Korea in subsequent waves and current sites used for online piracy in South Korea suggest that this analysis covers the popular sites used for online piracy during the period of analysis and that the coverage of the list likely stayed consistent within the analysis period.

Nielsen KoreanClick provided South Korea data for 157 such sites and applications included in this analysis, including 31 host sites, 21 link sites, 4 proxy sites and 101 P2P downloading sites and applications. Across categories Nielsen KoreanClick provides unduplicated audience data, which measures the total number of unique users that visit or use one or more applications or sites in the selected categories. Unduplicated audience is displayed in this report as a percentage of the total active internet population of South Korea.

The custom analysis presented summarizes trends in user access to selected sites/apps, but does not indicate the content accessed.

If Nielsen panelists do not access a site, Nielsen data cannot be generated. Examination of Alexa data for the sites without Nielsen data confirms that the sites were unpopular, and the likely reason for their absence is lack of visitation. Therefore, the absence does not affect the analysis.

**Table B.1 Blocked Sites with Nielsen KoreanClick Data**

Wave	No. Sites	Sites
1	14	4shared.com, btmoa.com, funshion.com, playzoa.com, tcafe.net, togoon.com, tohaja.net, torinee.net, torrent777.com, torrentgun.net, torrentkg.com, torrentmr.com, totorg.com, ttox.net
2	20	4shared-china.com, bamizoa.com, bitsnoop.com, cloudzoa.net, hi-bogo.net, mp30u.com, tfreeca.com, tnori.kr, togoons.com, tohari.com, torenzoa.info, torinee.org, torrentbom.com, torrentby.net, torrentby.us, torrentcup.net, torrentdown.net, totsky.com, tvday.net, tvzil.co.kr
3	32	abctb.net, cloudzoa.info, gongwon.net, gwtorrent.com, mblaq.net, tcafev.com, tcafex.com, tcafez.com, tcafez.net, tfreeca.org, tfreeca.us, tnori.net, tobogo.net, togoon.org, togoonz.com, torinee.info, torrent82.com, torrentdada.com, torrentdn.com, torrenters.com, torrentgogo.com, torrentgogo.net, torrentman.net, torrentme.net, torrentmr.net, torters.com, tosarang.net, tvzil.com, tvzil.kr, tvzil.us, wonzoh.com, xkm.kr