Lung Cancer audience and performance insights
Agenda

1. Treatment trends
2. Audience insights
3. Personas
4. Correlated cancers
5. Keyword correlations
6. Brand awareness
7. Marketplace performance
8. Recommendations
## Key findings

### Screenings may increase

The U.S. government tries to increase lung cancer screening in 2020, but it’s unlikely to pass this year with COVID-19 pandemic.

If passed, screenings should increase 2.5x, and it will be available to 10% of the U.S. population.

Barriers to testing remain:
- Lack of CT scanning
- Intrusive biopsies
- Low insurance coverage

### Women

Women comprise two of three searchers for lung cancer.

There are concerns over metastatic breast cancer as the cause of their lung cancer symptoms.

They spend just over 2 months searching for treatment information.

Overall, they live in the Southeast USA and they visit four sites to get consumer-quality lung cancer information.

### Metastatic cancers

In the study, we found indications that over 1/3 of searchers may have another cancer that has invaded their lungs.

Those cancers include:
- Breast
- Colo-rectal
- Prostate
- Bone
- Blood
- Skin
- Pancreatic

These cancers are the most likely to spread throughout the body.

This makes drugs that treat multiple cancers the most sought after.

### Healthcare provider (HCP) search

HCPs have very long, detailed search patterns.

They focus on the drug brand names and their generic forms.

HCPs seem most interested in side effects, using in combination with other cancer drugs or medical conditions like diabetes.

Conservatively, over 50% of brand name mentions indicate an HCP.

### Upper funnel

Our study indicates that upper funnel terms (condition & symptoms) remains the largest driver of clicks and conversions over the 3-month analysis period.

For the very last click by a searcher, 53% were on a generic, upper funnel term like ‘lung cancer’.

The remaining 47% of clicks were a mix of drug brand terms or a lower funnel keyword like ‘lung cancer treatment’.

### Syndication

Overall, cancer searchers on owned & operated (O&O) properties (Bing, Yahoo & AOL) have shown a mixed bag of up-and-down volume.

Syndication sites (like WebMD) have become more important in driving search volume and much lower cost-per clicks (CPCs).

Many searchers begin their lung cancer journeys on our partner sites, but ultimately convert from an O&O site.

*Please see Forecasts for more info*
Lung Cancer
treatment trends
Four things to know about lung cancer diagnoses

- **200,000** diagnoses in 2020
- **+26%** increase in 5-year survival rates
- **4%** of eligible Americans screened in 2018
- **-19%** decrease in lung cancer diagnoses

Barriers to testing

• Requires at least two tests and a biopsy (cost prohibitive)

• Biopsies can be dangerous

• Equipment is not available in all hospitals (CT scans)

• Medicaid does not cover screenings

• ‘Death Sentence’ stigma

Source: https://www.lungcancerresearchfoundation.org/news/ (retrieved on 7 July 2020)
The most at-risk populations

COVID-19 infected
- Immune system response to inflammation
- Pulmonary system compromised
- Older patients with weaker immune systems

Men
- Visit healthcare providers less frequently
- Let health checkups slip
- More likely to develop certain cancers

African-Americans
- Less access to healthcare
- Lower insurance coverage
- More likely to develop certain cancers

Source: https://www.lungcancerresearchfoundation.org/news/ (retrieved on 7 July 2020)
United States Preventative Strike Force (USPSFT) recommendations for screenings:

- Lower screening age from 55 to 50
  - Increases availability to 10% of U.S. population
- Add Medicaid coverage
  - Cover people with lower incomes
- Reduce 30-pack year guideline to 20-pack year (“light smoker”)
- Current smokers and those who quit in the last 15 years

This is predicted to reduce deaths by 13% in the first year

Audience insights
Women are the most common lung cancer searchers

AUDIENCE INSIGHTS

Sarah

35+ years old

63 Research days

66% Female searchers

Southeast Location

4-5 Paid search interactions

10 Days to SEM* conversion

Sites visited:

NIH

American Lung Association

WebMD

healthline

13% Search for metastatic breast cancer

Microsoft Internal Data, QP & CDJ, Lung Cancer searches, January – June 2020 | Minority Health Report, HHS.gov, July 2020
African-Americans have the highest mortality rates

35+ years old

63% AA Female searchers

14% 5-year survival rate

East Urban Location

3-4 Paid search Interactions

9 Days to SEM conversion

Sites visited:

NIH

WebMD

Drugs.com

American Cancer Society

15% Search for metastatic breast cancer

Microsoft Internal Data, QP & CDJ, Lung Cancer searches, January – June 2020 | Minority Health Report, HHS.gov, July 2020
Men in southern states have the lowest survival rates

50+ years old

34% Male searchers

16% 5-year survival rate

South Central
Location

3 Paid search interactions

8 Days to SEM conversion

Sites visited:

NIH
American Cancer Society
WebMD

26% Search for colo-rectal or prostate cancer
1-in-3 women search other cancers on lung cancer journey

33% of women search for cancers in addition to lung cancer
2-in-5 men search other cancers on lung cancer journey

AUDIENCE INSIGHTS

- Prostate: 13%
- Colo-Rectal: 13%
- Blood: 9%
- Bone: 3%
- Pancreatic: 1%

40% of men search for cancers in addition to lung cancer

Microsoft Internal Data, query path, April – June 2020
Southern and Eastern states have the highest click volumes

Top 5 states % of clicks

California 8.9%
Texas 7.4%
Florida 7.2%
New York 5.9%
Ohio 4.7%
After adjusting for population, the leading states change

Top 5 overindexed clicks

- District of Columbia 203
- Ohio 131
- Maryland 125
- Georgia 118
- Rhode Island 118
Twitter sentiment: COVID-19 remains a concern for lung cancer stakeholders

Lung cancer patients express concern on chemotherapy & COVID-19 risks:

Will chemo put me at risk of COVID-19?
-User891

Doctors & researchers share the latest white papers on lung cancer anti-inflammation:

Drug linked to 45% lower risk of dying among COVID-19 patients on ventilators #ConnectingHopeToHealing
https://t.co/oaiX0h9gDP
-@SurgeonGeneral

Family & friends worry about loved ones in hospice and senior care facilities:

90 year old grandparent has lung cancer caught covid and is dead!
https://t.co/W9qn5P3Bhn
-@Steve_c1970
Searches for lung cancer spike on news cycle

Source: Microsoft internal data on terms, lung cancer and Covid-19, mapped to news cycle activity on global pandemic, Jan. 1, 2020 – June 30, 2020
Lung cancer general term is the primary driver for all searches

Within the lung cancer community related prominent queries are:
- ‘symptoms’
- ‘what is’
- ‘survival rate’

Connected communities to the lung cancer community:
- Stage 4 lung cancer searches, which particularly are connected by queries related to ‘survival rate’ and ‘life expectancy’
Most searchers use general lung cancer terms in queries

Lung (General) = Lung Cancer
NSCLC = Non-Small Cell Lung Cancer
SCLC = Small Cell Lung Cancer
Other = Other tumors found in lungs
Stage 4 is most searched for cancer diagnosis

Stage categorization requires the use of an explicit stage, early or late indication in queries to categorize

Stage 1 uses ‘stage 1’ or ‘early’ words in queries

Stage 4 uses ‘stage 4,’ ‘metastatic,’ ‘advanced,’ or ‘late’ words in queries

Stage 2 words appeared in less than 1% of queries
Keytruda and Tagrisso dominate brand searches

3 main clusters are evident in the overall query network:

- Two of the central nodes are brand terms and one is non-brand
- Close to no relationship at all between brand and non-brand queries
Lung cancer searchers look for NSCLC treatments

Ten Most Searched For Drugs By Lung Cancer Searchers

- keytruda
- tagrisso
- imfinzi
- tecentriq
- opdivo
- cerulasta
- ibrance
- gilotrif
- xgeva
- zalcori

Immune support (side effect)
Indicates metastatic condition (breast cancer)
Indicates metastatic condition (bone cancer)
Keytruda search indicates cross-shopping behavior and side effects

The main Keytruda community includes a lot of other brands when a brand is connected to Keytruda, it is often connected to other brands as well indicating customers are comparing searches related to Keytruda is often a single connection through smaller communities, such as side effects and costs

Microsoft Internal Data, Lung Cancer searches, April – June 2020
Tagrisso search leads to other drugs, metastatic cancers

Tagrisso searchers continue to look for drugs to treat breast and bone cancer

Examples:

- Ibrance
- Kisqali
- Xgeva
- Verzenio
- Generic forms
### Brands in lung cancer searchers’ consideration set

<table>
<thead>
<tr>
<th>Drug Name</th>
<th>General Lung Cancer</th>
<th>NSCLC</th>
<th>SCLC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alimta</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Cyramza</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Gilotrif</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Imfinzi</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Keytruda</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Lorbrena</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Opdivo</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Tabrecta</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Tagrisso</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Xalkori</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Marketplace performance
Lung cancer searches have remained stable over a six-year period.
Searchers use paid search 3x more than organic listings

76% for paid
23% for Algo
Mixed less than 1%

Most searchers opted to use paid search listings to educate themselves about lung cancer and its treatment options.

Organic listings were used more for side effects and survival rates.

Less than 1% of searchers used both paid and organic listings.
Searchers click for brands, but after general lung cancer terms

Non-brand terms fall into different segments

**Upper funnel** terms include condition and symptoms
- ‘lung cancer’
- ‘lung cancer symptoms’

**Lower funnel** terms include diagnosis and treatment
- ‘stage 4 lung cancer’
- ‘drugs for lung cancer’
MARKETPLACE PERFORMANCE

Non-brand terms dominate each stage of conversion funnel

Notice how brand terms increase or “lift” at the very end of the conversion funnel as non-brand terms teach searchers about lung cancer treatment.

That’s about +80% lift
Upper funnel terms deliver 50+% of last clicks for searchers

Microsoft Internal Data, Lung Cancer QP Sequences, April – June 2020
Syndication performance
Search partners deliver 3x more mobile traffic

**Click volume % all devices**

- **O&O**: 45%
- **Search partners**: 55%

**Click volume % mobile**

- **O&O**: 24%
- **Search partners**: 76%

**Click volume % PC and Tablet**

- **O&O**: 84%
- **Search partners**: 16%

Microsoft Internal Data, Lung Cancer searches, April – June 2020
MARKETPLACE PERFORMANCE

Search partners deliver more efficient CPCs

CPC all devices: -71%
CPC mobile: -63%
CPC PC and tablet: -71%

Microsoft Internal Data, Lung Cancer searches, April – June 2020
O&O drives higher conversion rates

Conversion rates (CVR) all devices: +216%

CVR mobile: +236%

CVR PC and tablet: +208%

PCT = PC + tablet

Microsoft Internal Data, Lung Cancer searches, April – June 2020
Lung cancer forecasts

O&O only
Lung cancer click volume will decrease through 2021
MARKETPLACE PERFORMANCE (FORECAST)

Lung cancer CPCs will increase through 2021

MARKETPLACE PERFORMANCE

Cancer click volume shifts to syndication

Recommendations

**Audience**
- Discuss targeting optimizations by gender, related cancers, location & Remarketing

**HCP Search**
- Review sequencing for HCP-specific terms and keyword expansions

**Upper funnel**
- Upper funnel lung cancer terms drive over 50% of converting clicks: Consider them throughout the lung cancer journey

**Syndication**
- Create specific campaigns for syndication to reach searchers looking for treatment options
Strategies and recommendations

Learn immediate and recovery-phase strategies, and how to approach new opportunities and optimize account health in the Digital Advertiser's Guide to COVID-19
Appendix
Users were qualified as searching for lung cancer terms over a 3-month period.

All users analyzed were in the U.S. on a PC, tablet or mobile device.

Digital research behavior was collected for April – June 2020.

Users were assumed to have ended their journey when they trigger a tracking event or stop searching on lung cancer for 2 weeks.
Users were qualified as posting lung cancer & COVID-19 terms over a 1-week period.

1,000,000 Tweets were identified as qualified lung cancer & COVID-19 stakeholders.

All users analyzed were in the US on a PC, tablet or mobile device.

Digital research behavior was collected for July 7-15, 2020.
Query network
Evaluating relationships between lung cancer queries
Query networks, briefly explained

On color...

Queries who interact each other more frequently within the same consumer search path are coded with the same color.

On node size...

Node size is representative of the number of unique queries that query has occurred in paths with
Network science terminology

**Node** – the visual representation of one value in a network. In our case, a query.

**Edge** – the line connecting one node to another, indicating a relationship. In this case, meaning they have regularly occurred in the same query path.

**Community** – a group of nodes and edges that have been algorithmically determined to have stronger relationships with each other than with the rest of the network. In this case, meaning they occur in query paths together with more frequency.
On color...

Community detection algorithms have color-coded queries by community.

Queries who interact each other more frequently within the same consumer search path are coded with the same color.
On node size...

The size of a node is representative of its centrality within the network. In layman's terms, you can think of these as being the most important queries in the network.

The literal interpretation is: node size is representative of the number of unique queries that query has occurred in paths with.

For our networks, centrality is calculated using a metric called betweenness.
What we look for in the query network

- Large nodes
- Nodes that interact across communities
- How many different communities illuminate when a central node in a community is selected
- Instances of nodes in unlikely communities, such as "microsoft cloud" being in the "google cloud" community