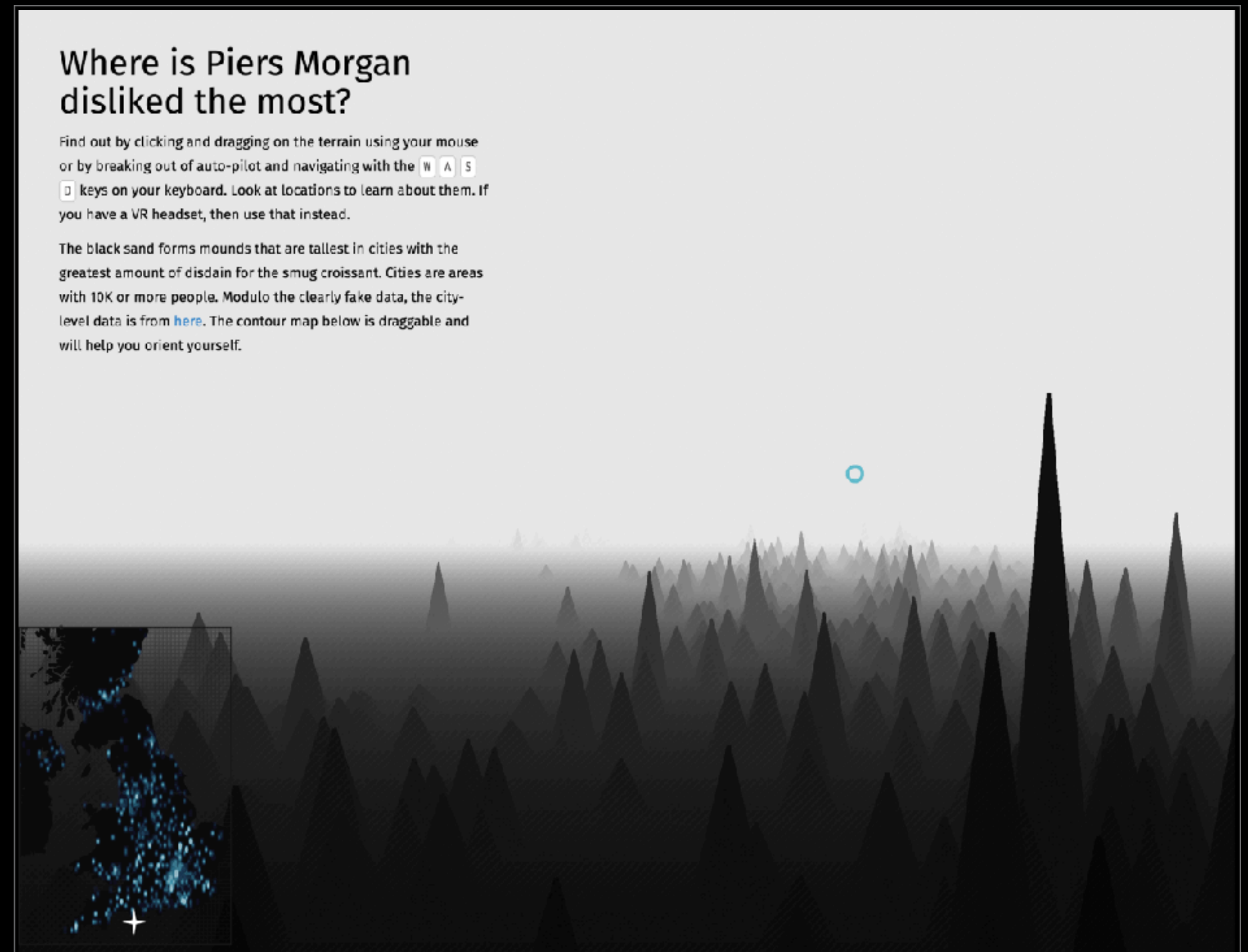


Data Visualisation of Un-natural Deaths in VR

Akvil Sakhare | 15 63 300 13 | Interaction Design
Guide: Prof. Venkatesh Rajamanickam

Examples

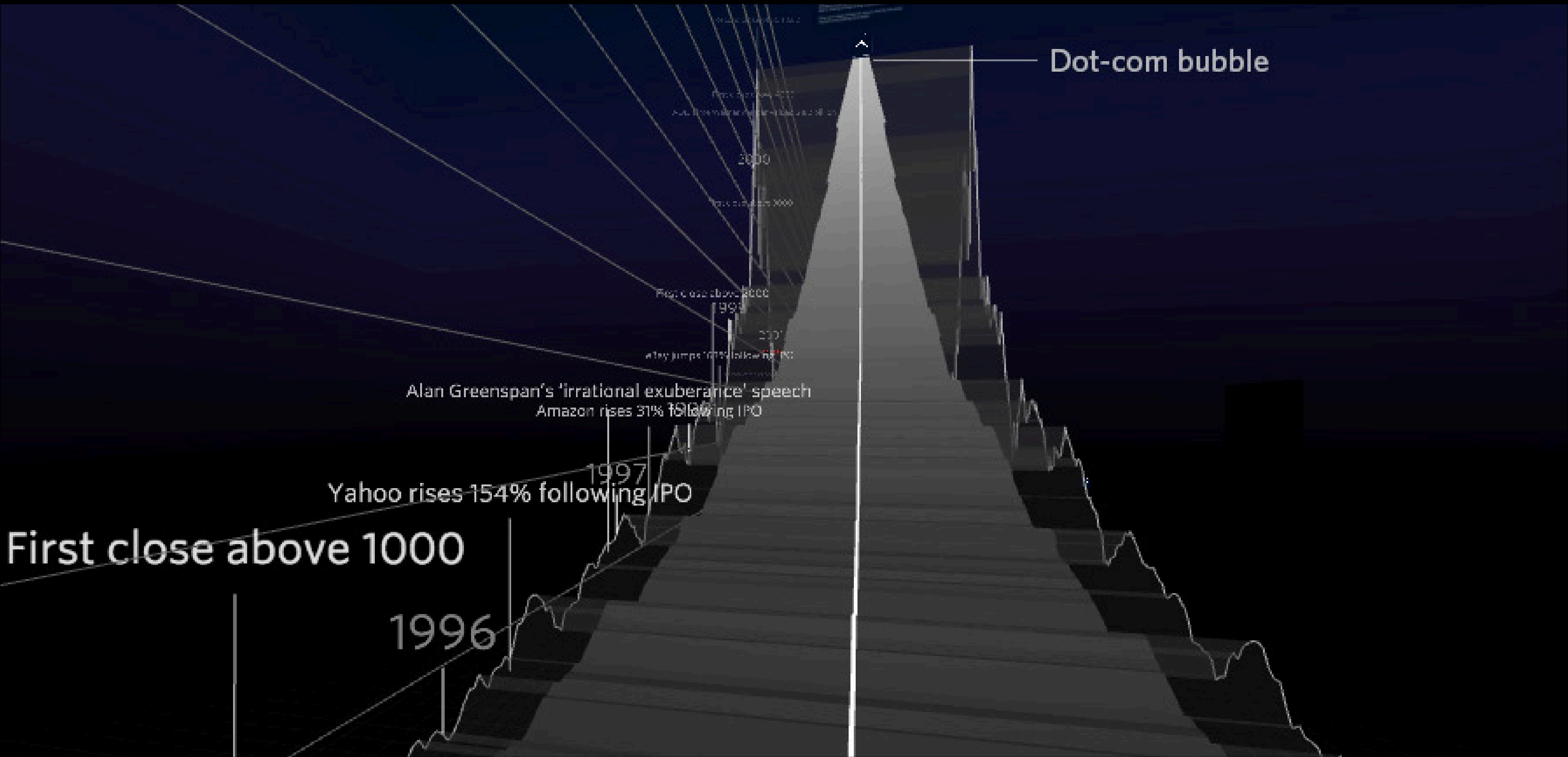
1. 21 years of the Nasdaq as a rollercoaster.
<http://graphics.wsj.com/3d-nasdaq/>
2. Where is Piers Morgan disliked the most?
<http://almossawi.com/aframe-d3-visualization/demo/>
3. Interactive guide to the UK's EU referendum
<http://news-lab-brexit.appspot.com/vr/>
4. VR Basketball Data Visualisation
<http://datavized.com/>
5. Nirvaniq Labs, Data Visualization In VR
<https://www.youtube.com/watch?v=wacNaAVGXdU>
6. Virtual Reality to Visualise Data on Salesforce
<https://www.salesforce.com/video/192746/>
7. WebVR City Data Visualization
<http://povdocs.github.io/webvr-cities/#L2MxMgGxlj154CRX>
8. <http://www.daden.co.uk/conc/datascape>



Where is Piers Morgan disliked the most?



21 years of the Nasdaq as a rollercoaster



DeathTolls Experience

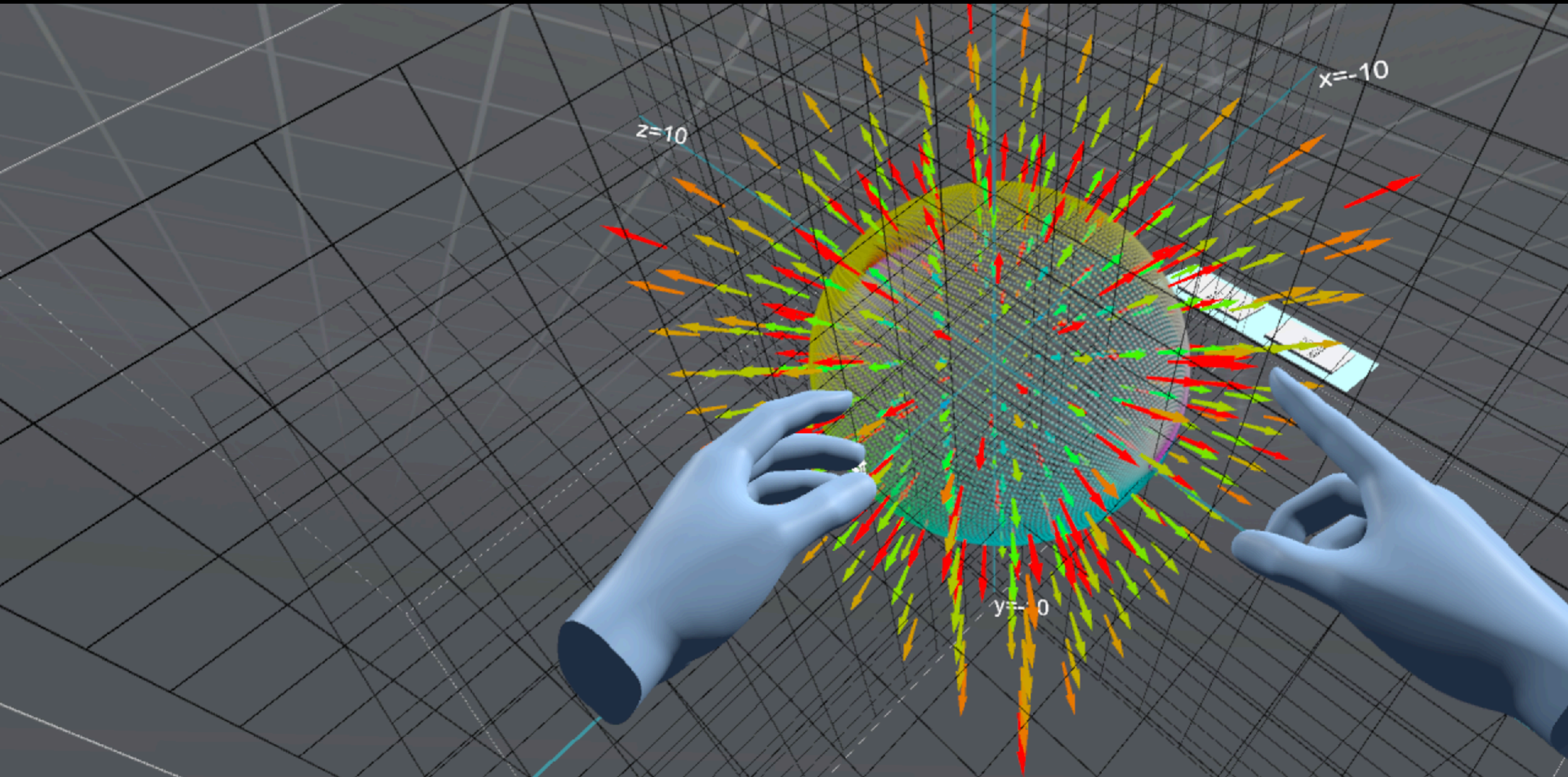
Pakistan - 2004-Aug 2015
US Drone Strikes



LoVR

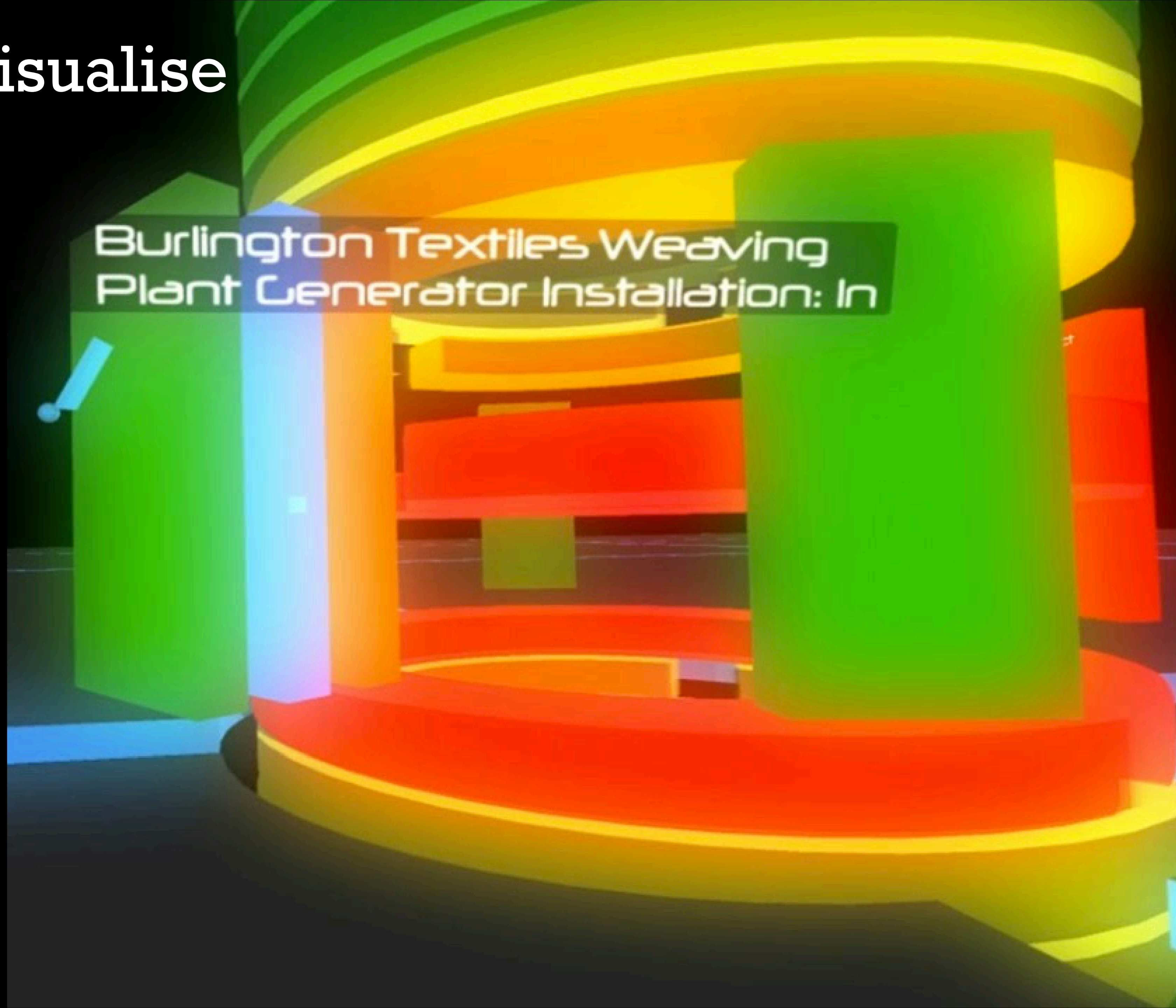


Calcfow: Mathematical Functions

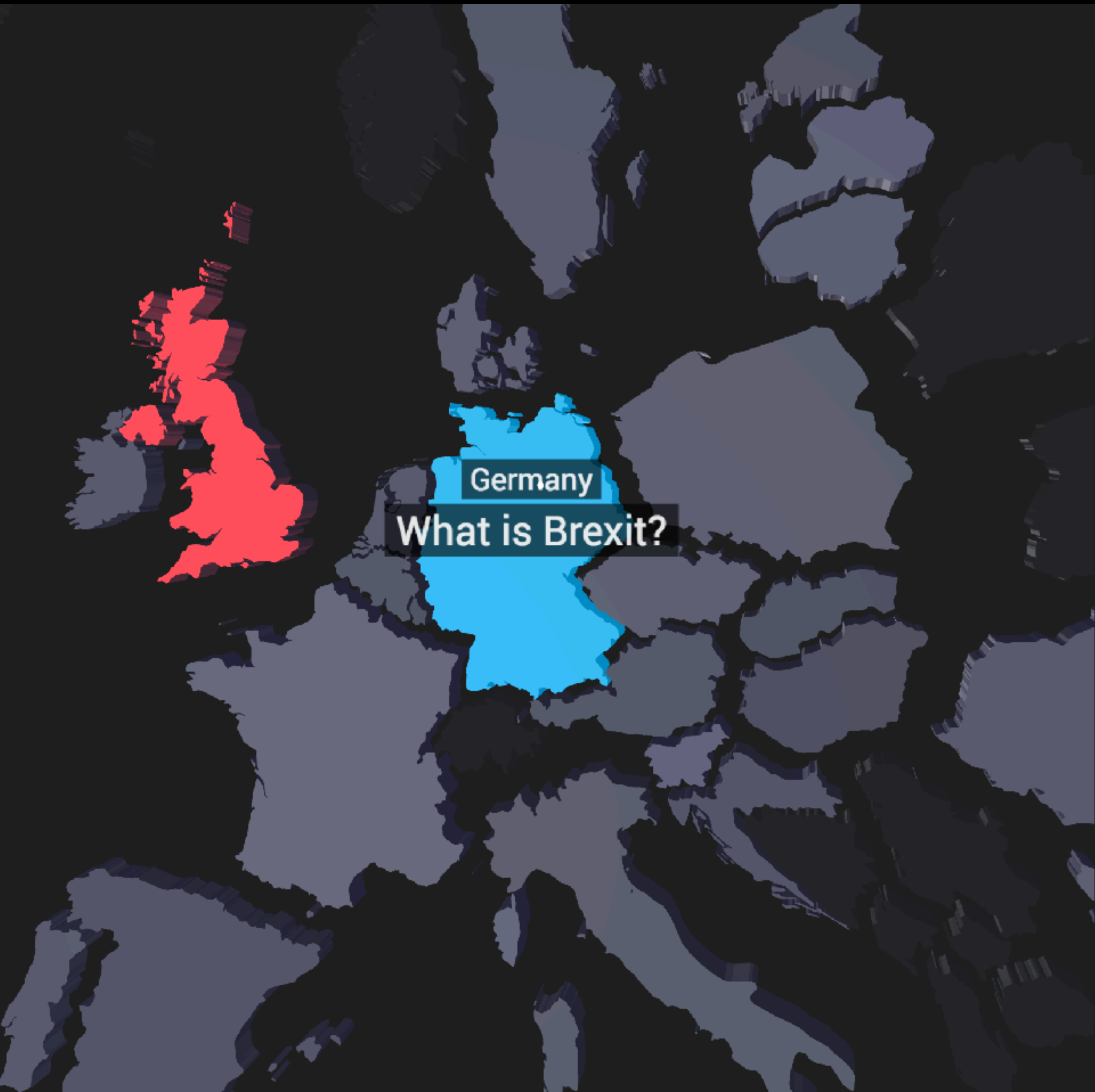


Virtual Reality to Visualise Data on Salesforce

Burlington Textiles Weaving
Plant Generator Installation: In



Interactive guide to the UK's EU referendum



Data Stories (DRS)

Since 2004, drone strikes have killed an estimated 3,341 people in Pakistan.

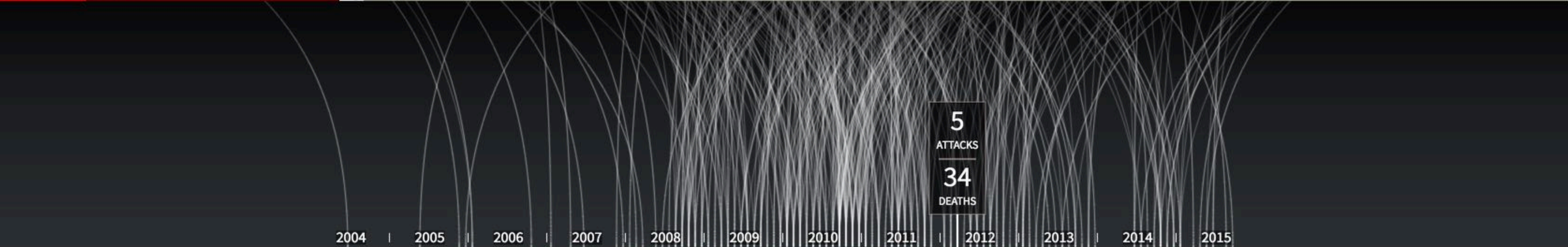
This is the story of every known drone strike and victim in Pakistan.

Out of Sight, Out of Mind.

ATTACKS VICTIMS NEWS INFO SHARE

ESTIMATED TOTAL FATALITIES **3341**
EN FR

CHILDREN	CIVILIAN	HIGH PROFILE	OTHER
190 5.7%	534 16%	52 1.6%	76.8% 2565



Mar 09, 2012

0	Children Deaths	0	Civilian Deaths	6	Other Deaths
---	-----------------	---	-----------------	---	--------------

6 of 34 Deaths that month

Where: Nishpa

Three sources reported a second strike. The first reportedly hit a vehicle, killing up to 15 militants. The second strike was said to have hit a house 12 kilometres away, killing 'six Uzbeks'.

Brief

- To design a data story with multiple visualisations for easy access, process and memorisation of data for Virtual Reality
- Easier pattern recognition and retention
- Data handling, division in sections and patterns to read data
- Using empathy and subjectivity
- Context specific interactions to relate with the content

Technologies

- Head mounted displays
 - Mobile: **Google VR** (Daydream, Cardboard), Samsung Gear VR
 - Desktop: Oculus Rift, **HTC Vive**, Playstation
- WebVR: A-Frame + D3
- Game Engines: **Unity**, Unreal
- Softwares: Blender

Approach

- Unity for cross platform use of plugins
- Debug with cardboard and mobile
- Evaluate on desktop HMD

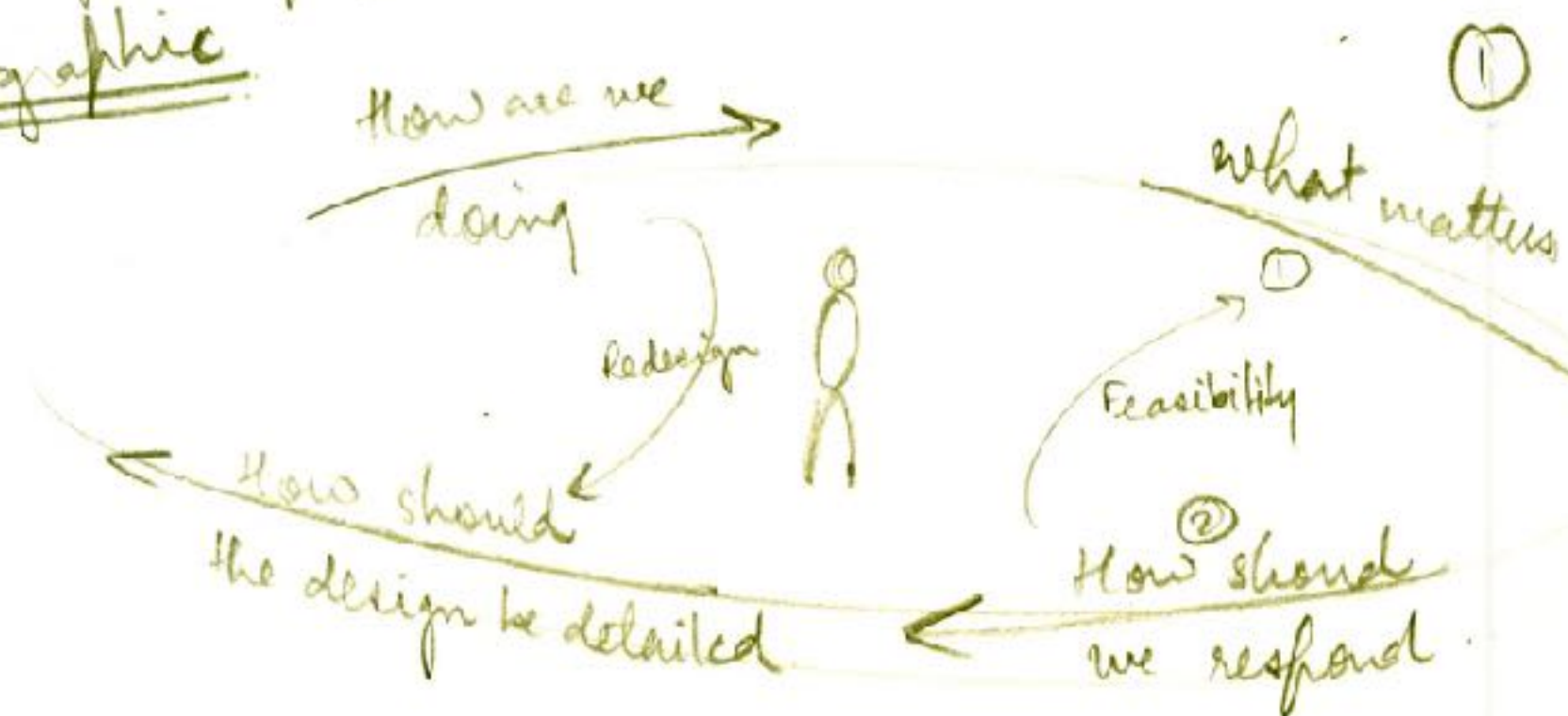
Datasets

- Medical data
- Ajanta
- Napoleon march from Moscow
- Visualisation on India from government data

ideation → scenarios → storyboards.
interaction steps visual depiction of those

360 space - Readability - extraction of info

aj's design process
Infographic

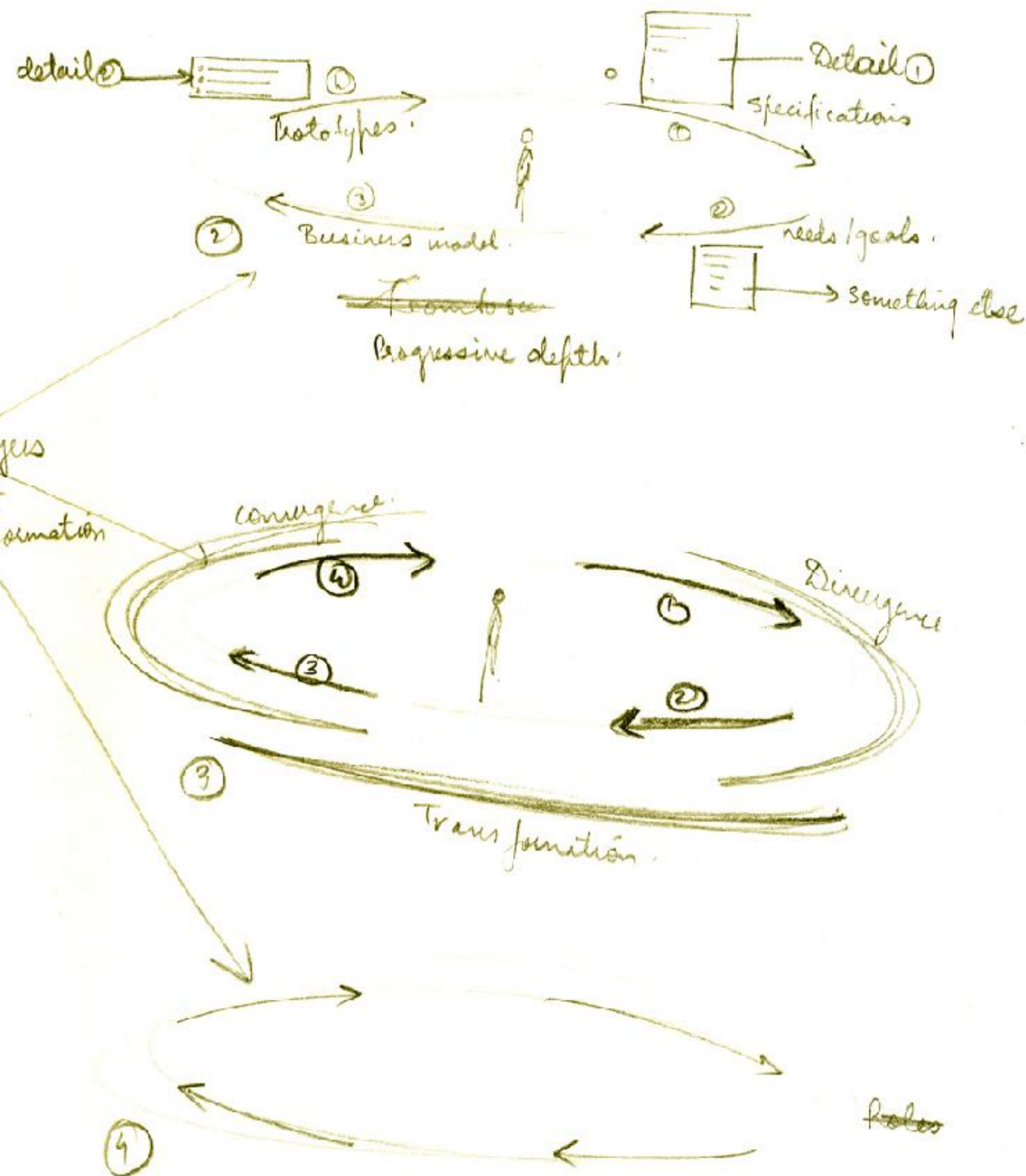


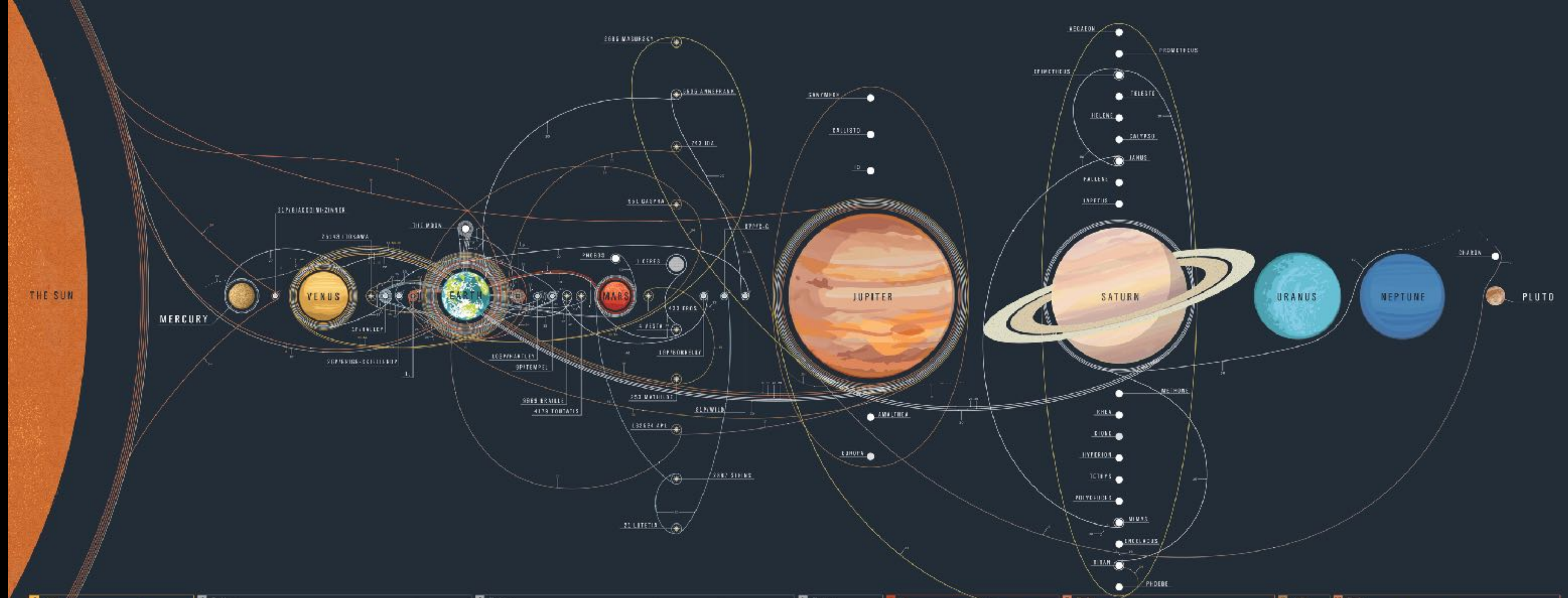
Actions

Roles of people

animate the cycle with text from ① to ⑧
Performance tests

too small?





1 The Sun

THE SUN

2 The Moon

THE MOON

3 The Moon

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99 The Moon

THE MOON

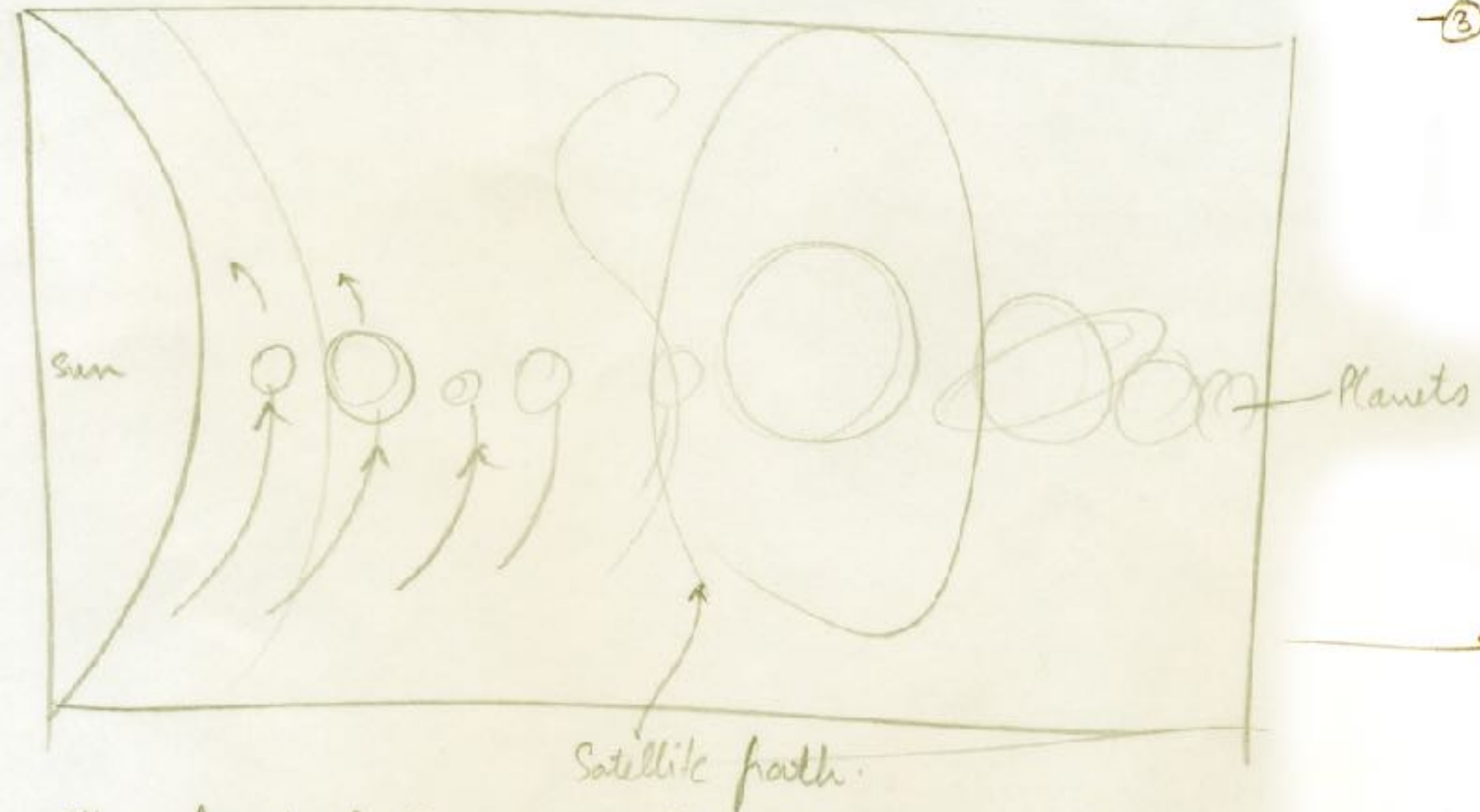
100 The Moon

THE MOON

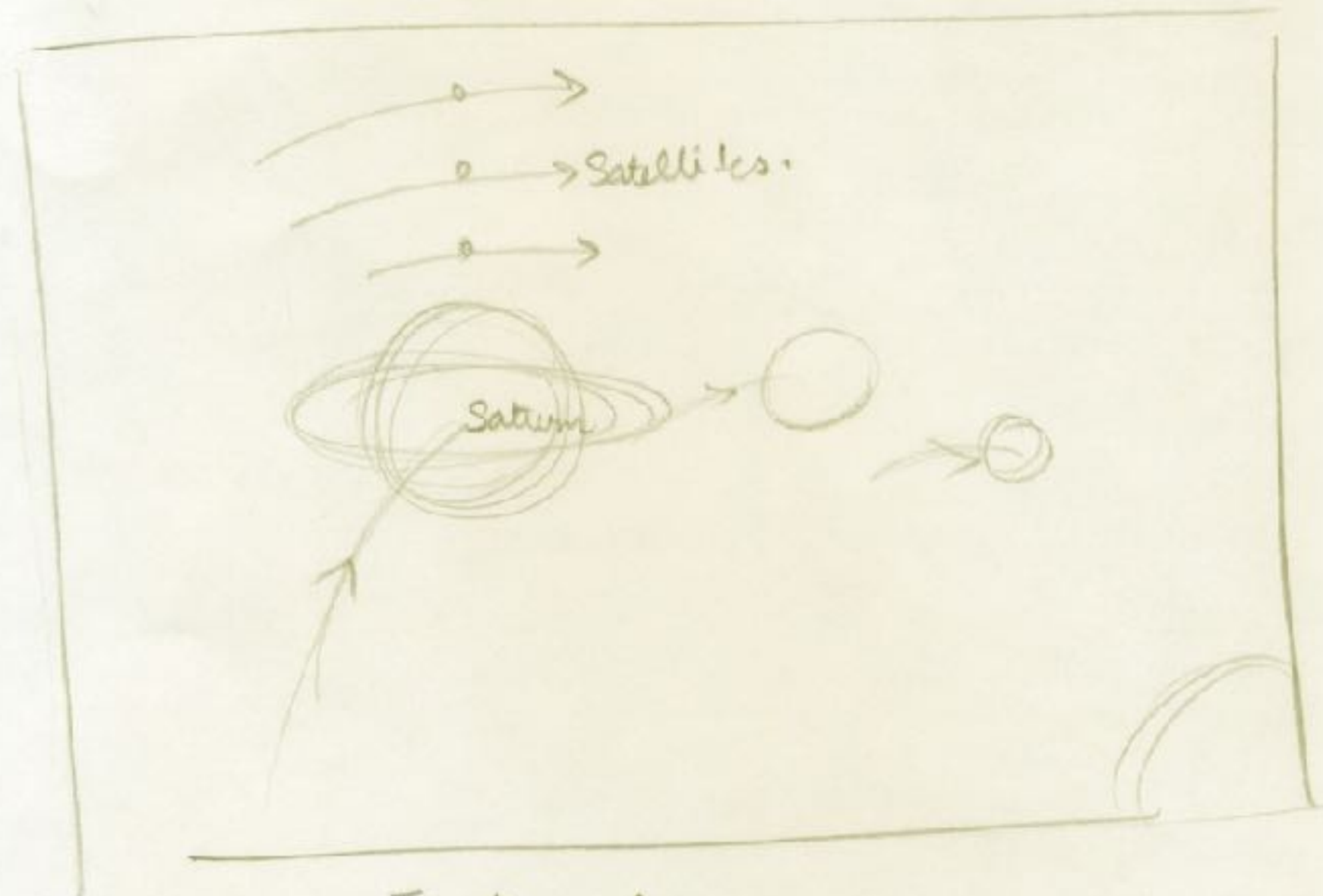
Solar System

- ① Sun is stationary, while planets revolve around it & satellite revolve around planet.
- ② Click on a planet and look at the satellite's motion
- ③ Some details about the satellite.

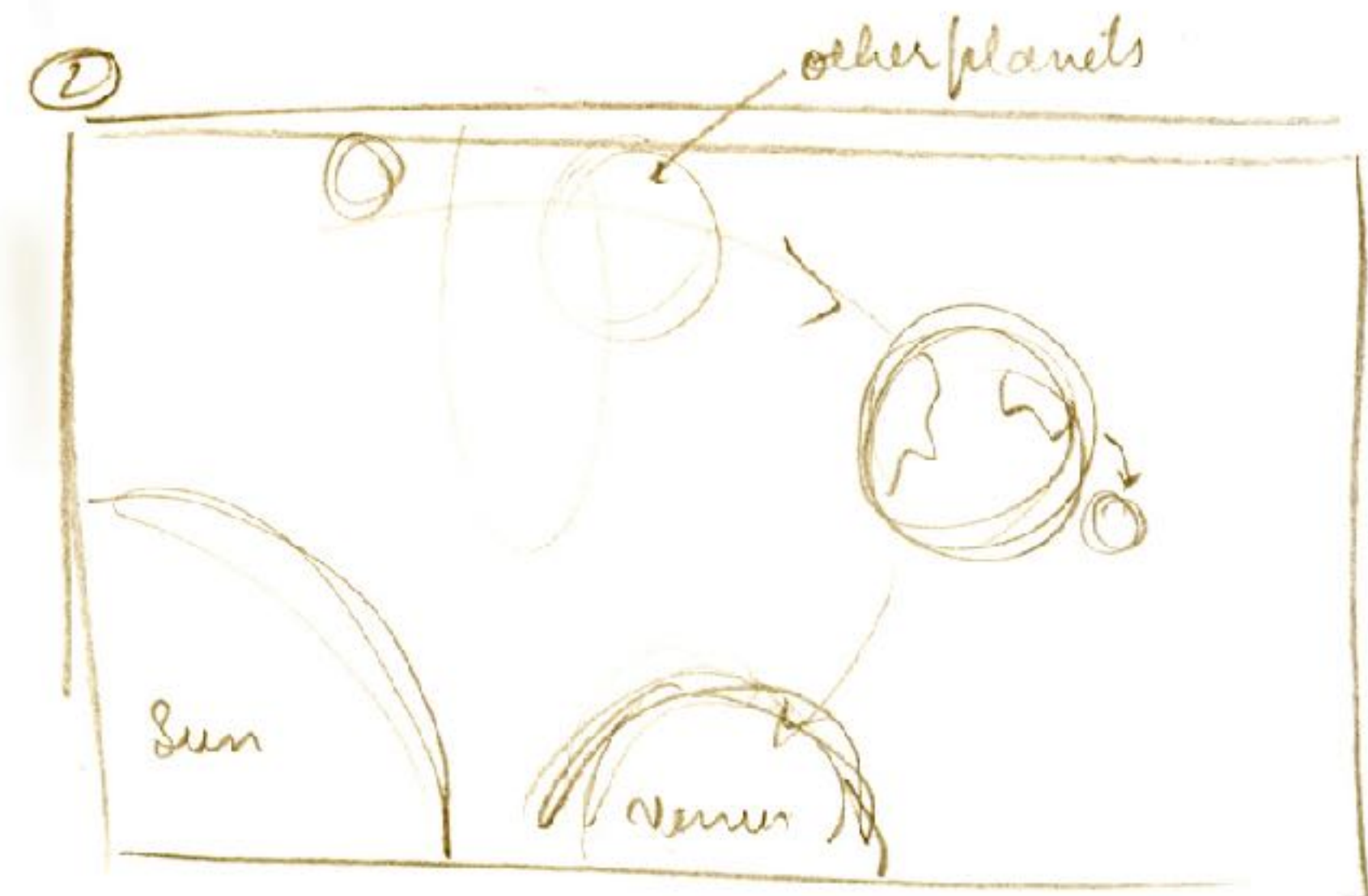
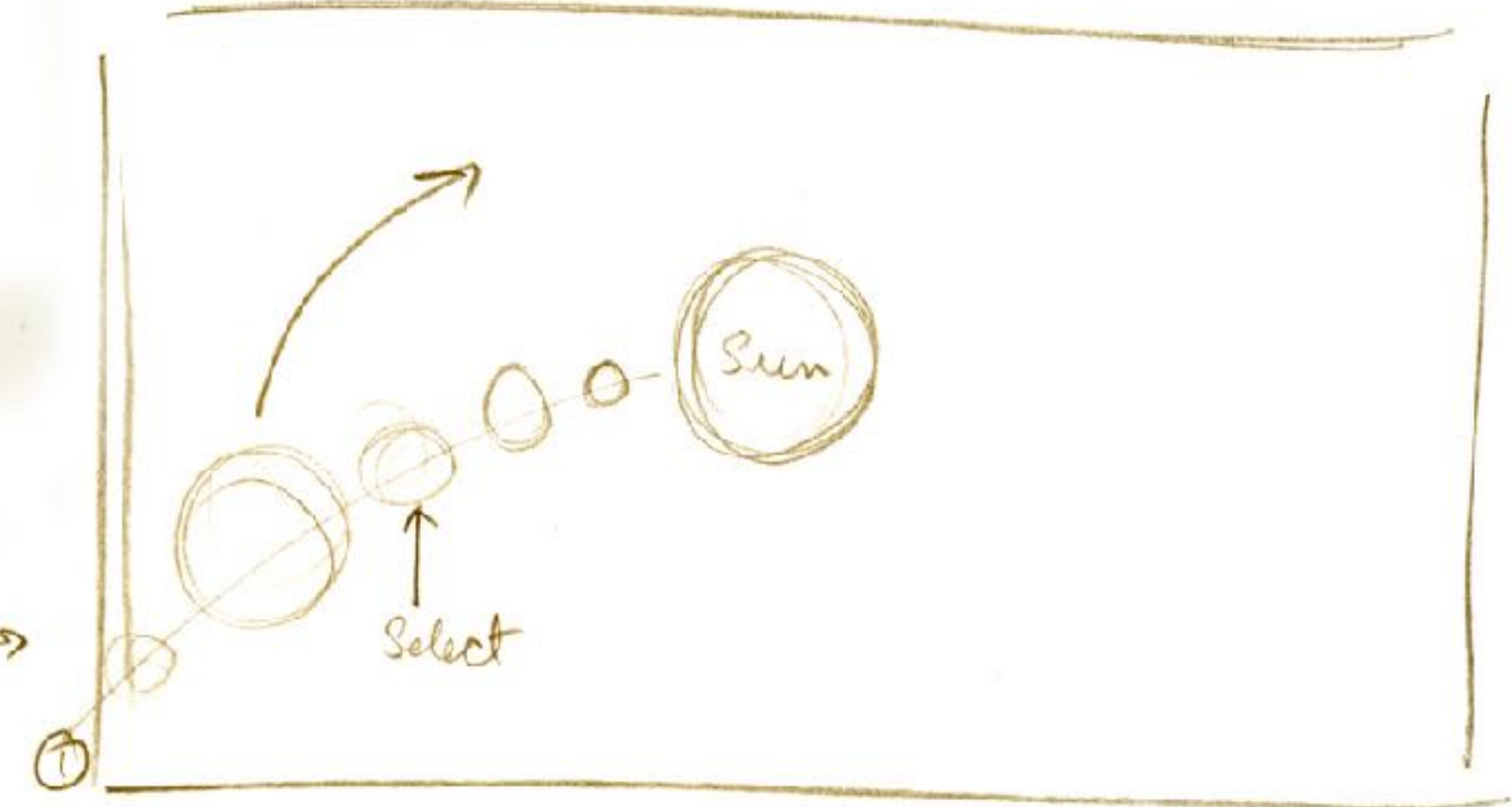
11/9/20 Feb 2017



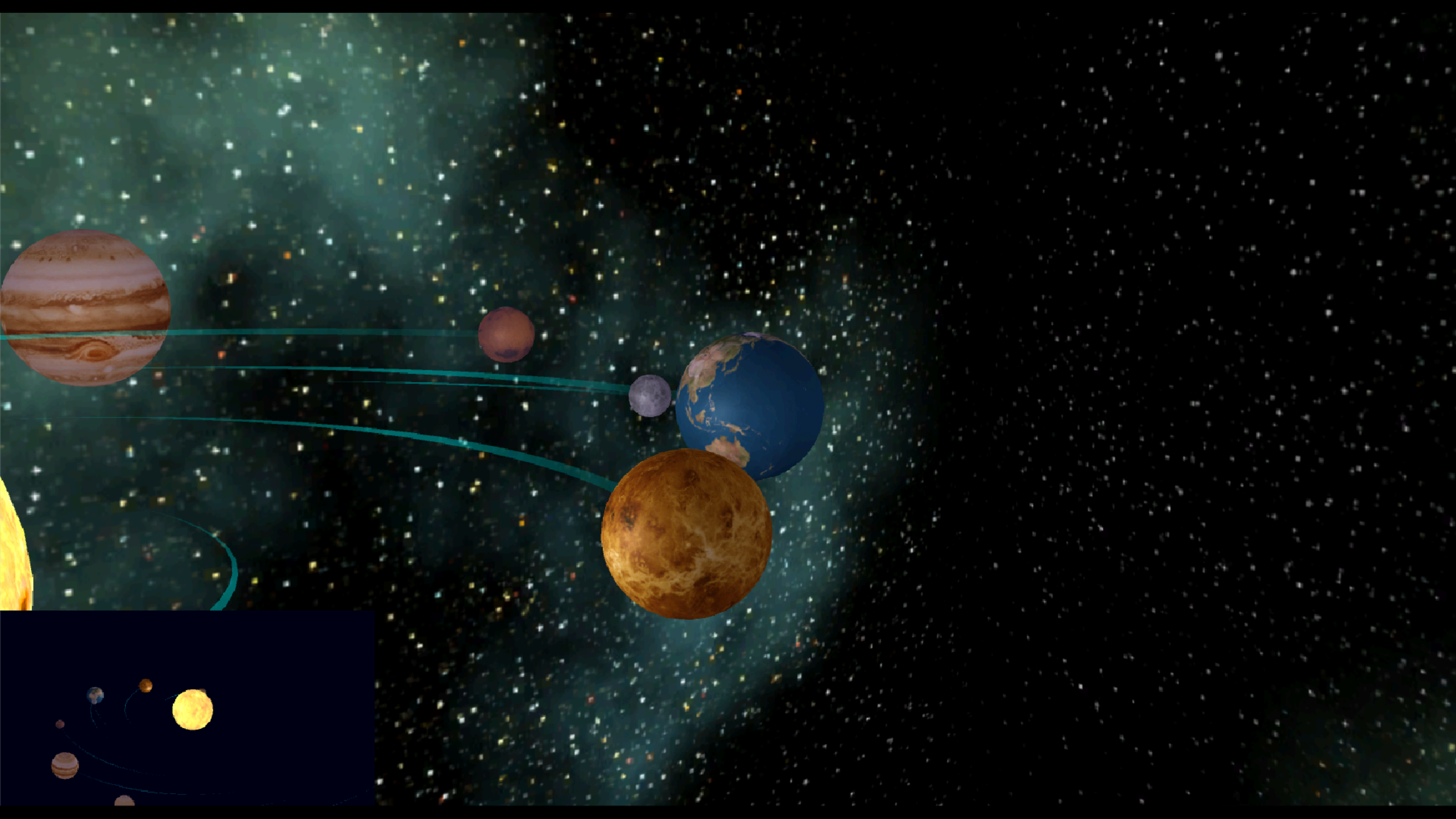
The chart of Cosmic exploration



Timeline of







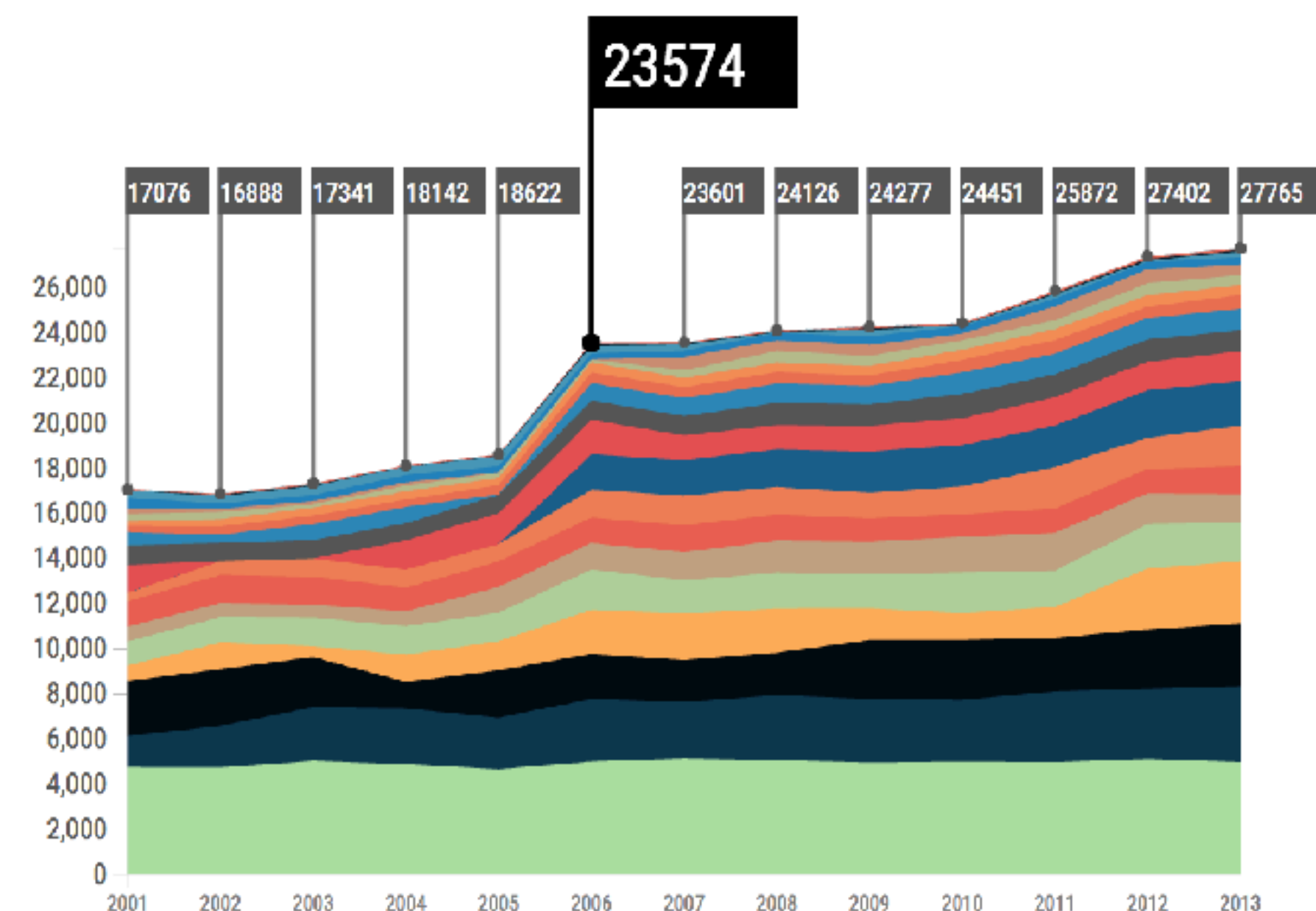
Un-natural Death Data

Select cause of death and hover-over the years or States & UTs to see the numbers.

RAILWAY ACCIDENTS

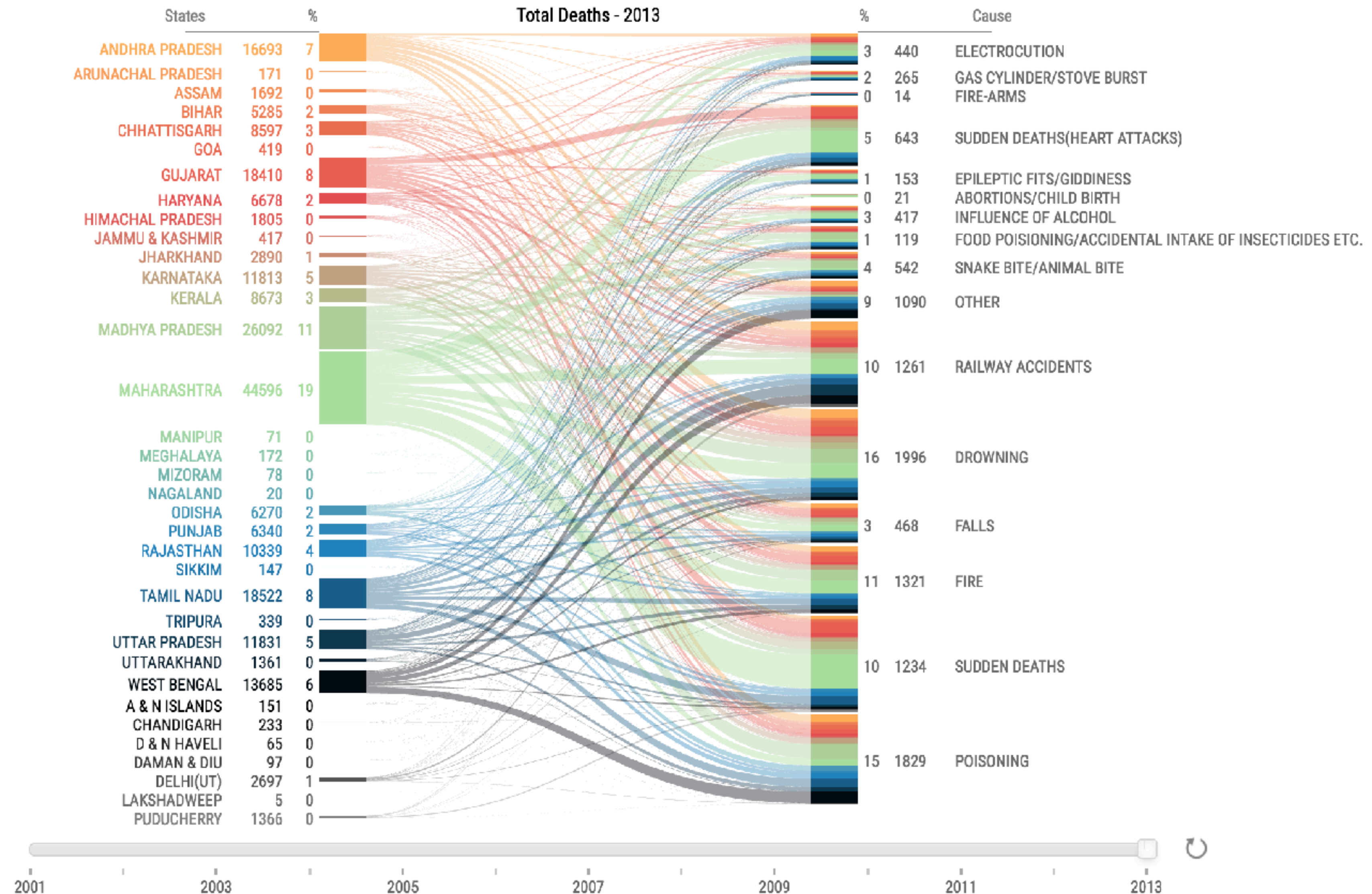
SUDDEN DEATHS

1



Distribution of un-natural deaths, State/UT-wise; and distribution of States/UTs, un-natural death-wise

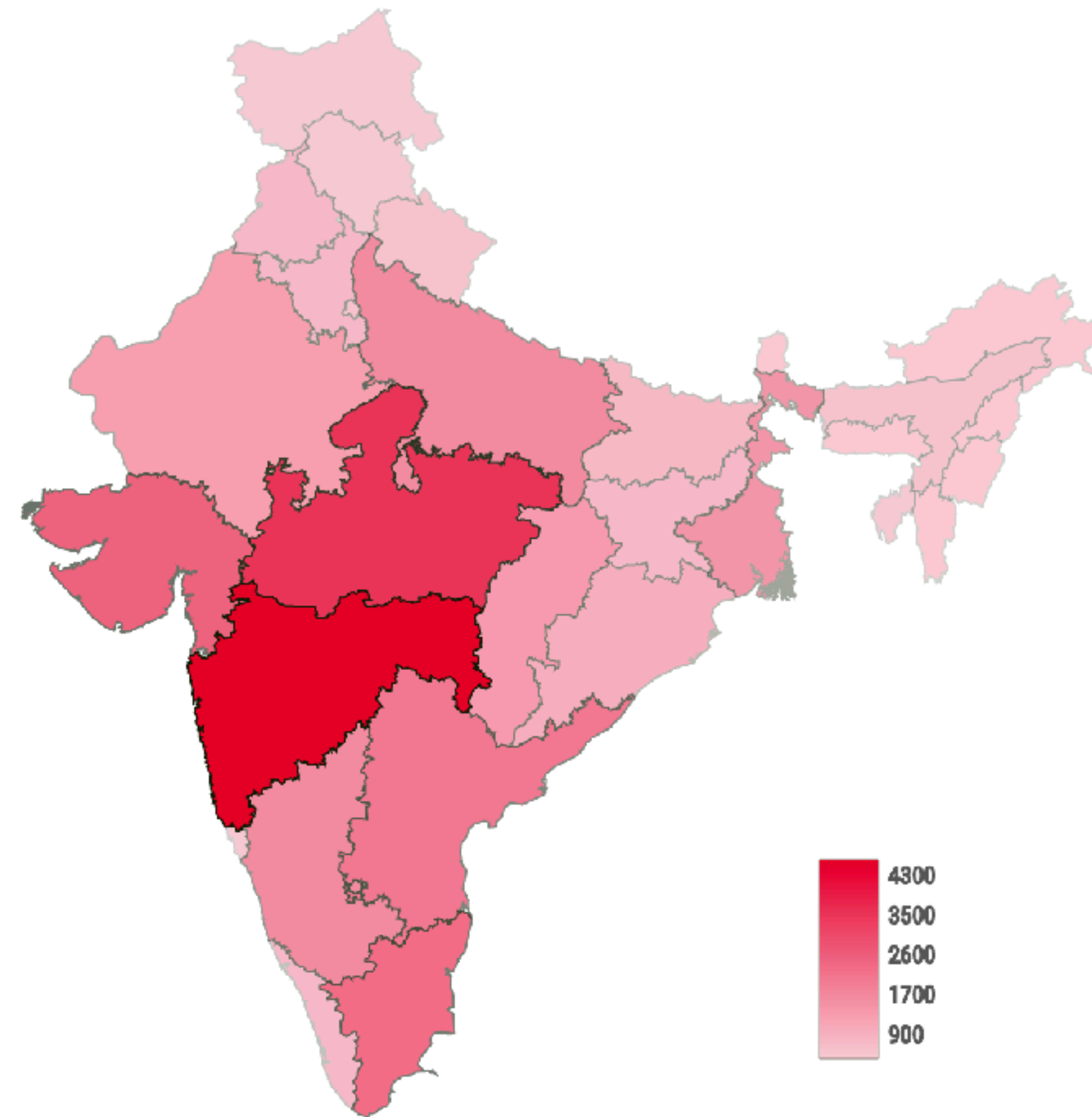
Hover either over State/UT or un-natural death to see the distribution. Position the time-line slider to see yearly snapshots or play sequence to see trend.



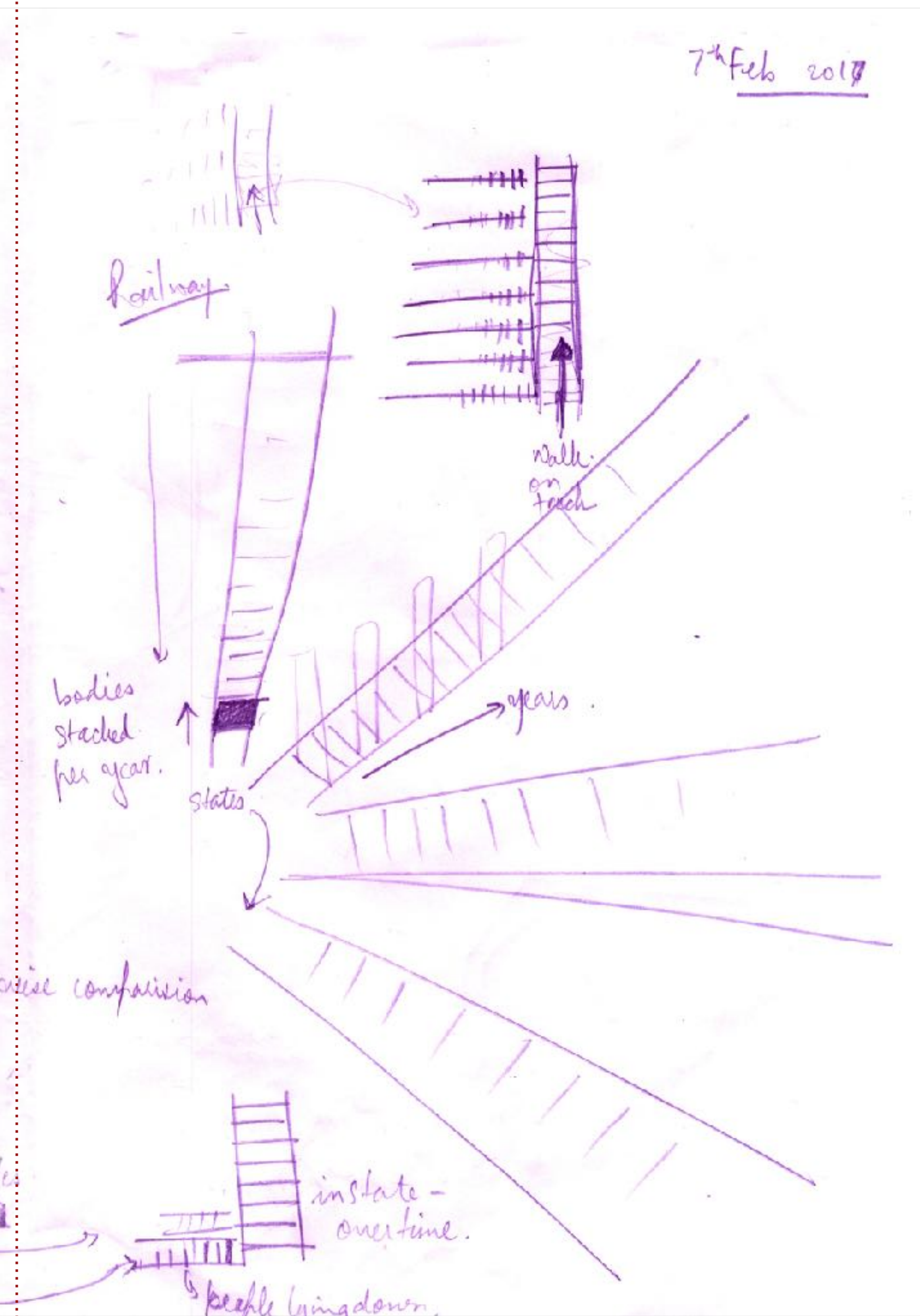
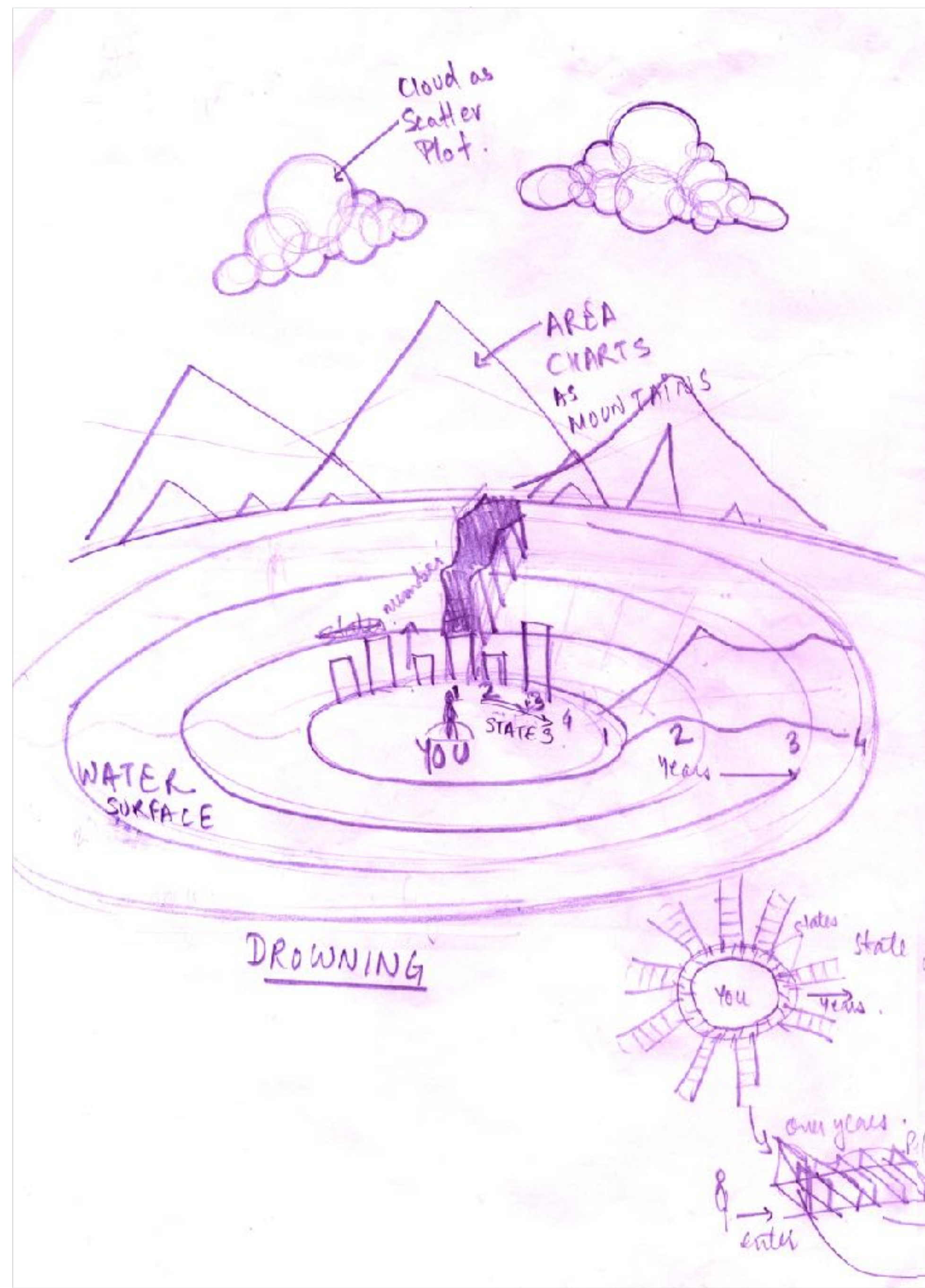
Geographical distribution of un-natural deaths across the country

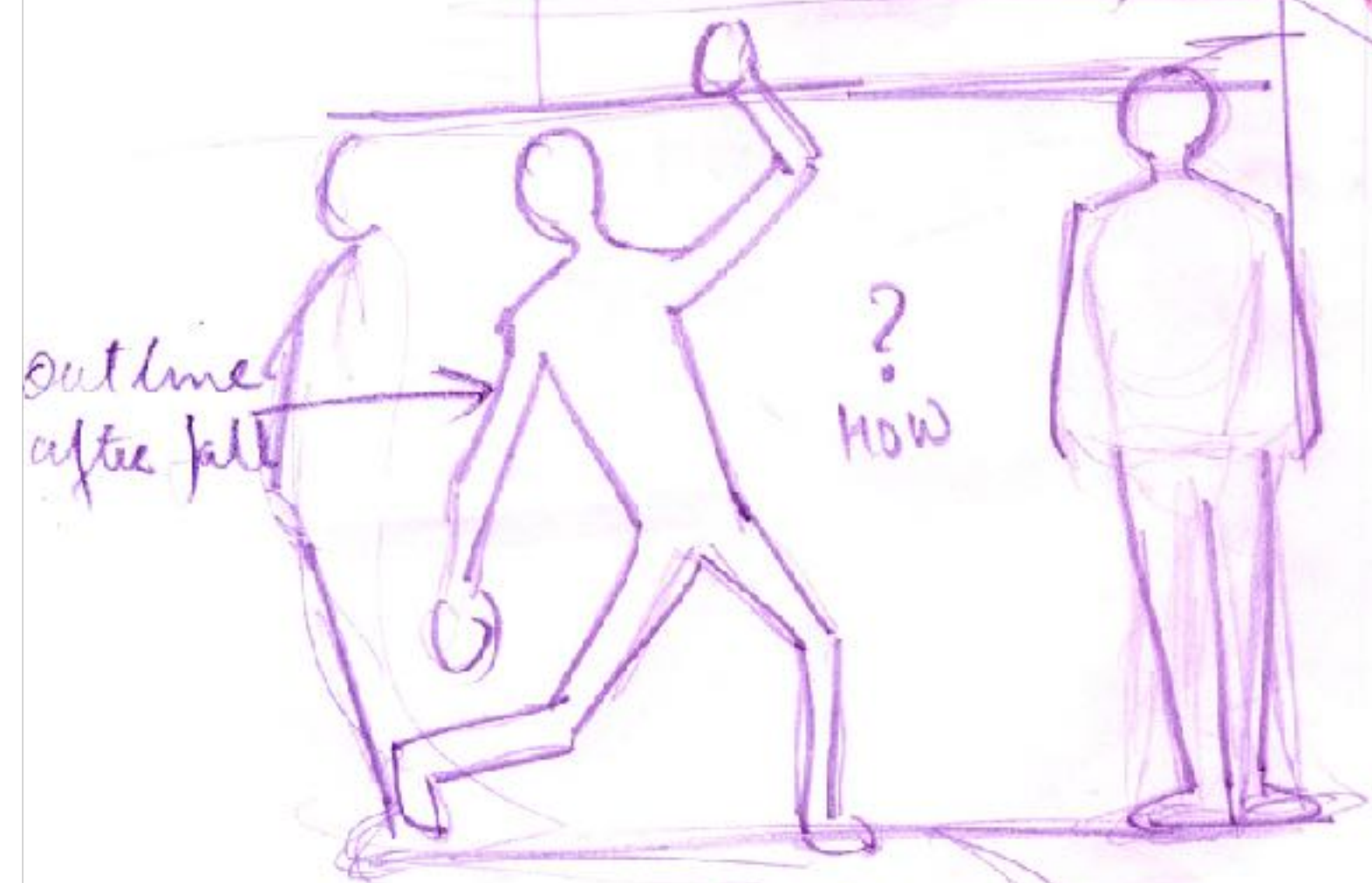
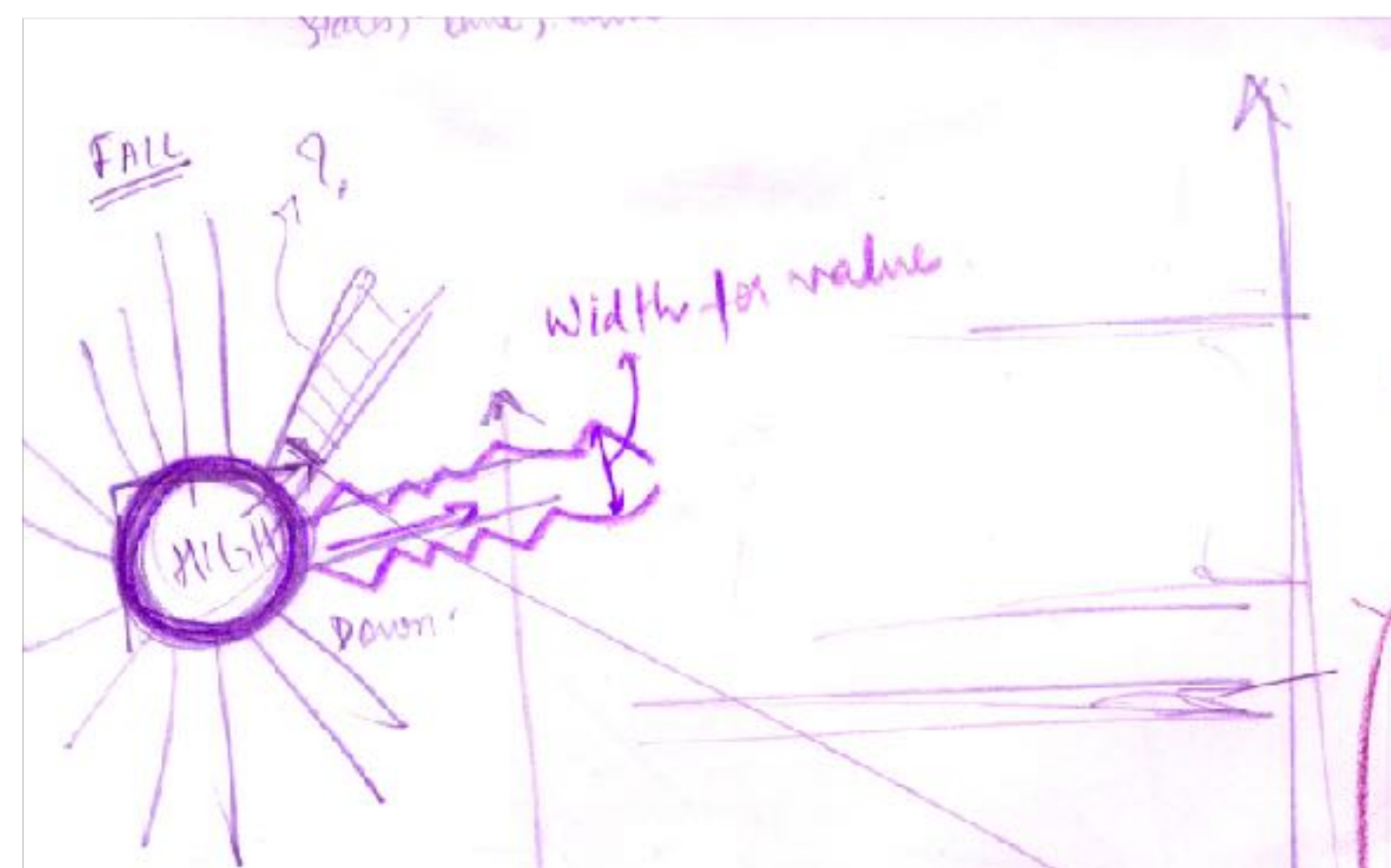
Hover either over State/UT colour blocks or un-natural death colour blocks to see the distribution. Position the time-line slider to see yearly snapshots or play sequence to see trend.

- ALL
- ABORTIONS/CHILD BIRTH
- DROWNING
- ELECTROCUTION
- EPILEPTIC FITS
- FIRE ARMS
- FIRE**
- FALLS
- FOOD POISONING
- GAS CYLINDER
- HEART ATTACKS
- INFLUENCE OF ALCOHOL
- OTHER
- POISONING
- RAILWAY ACCIDENTS
- SNAKE/ANIMAL BITE
- SUDDEN DEATHS

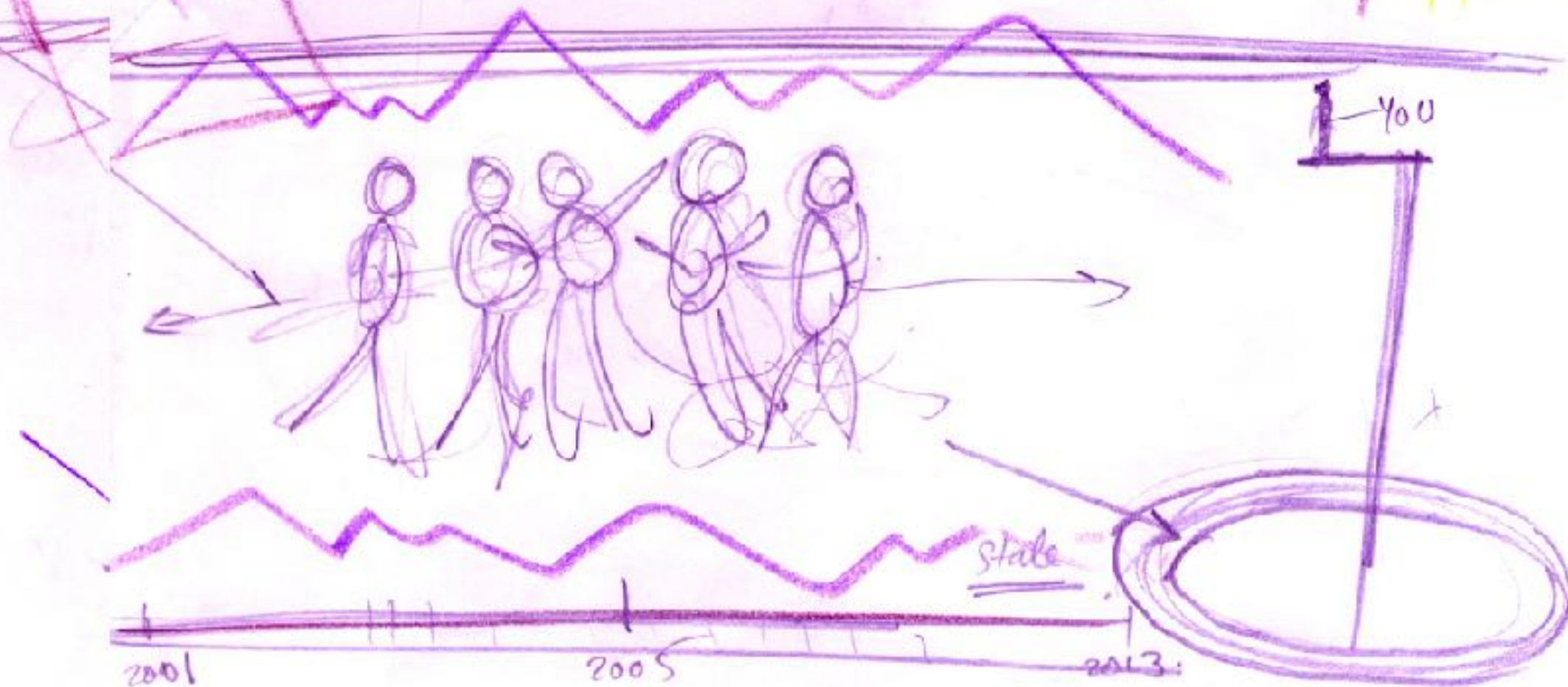
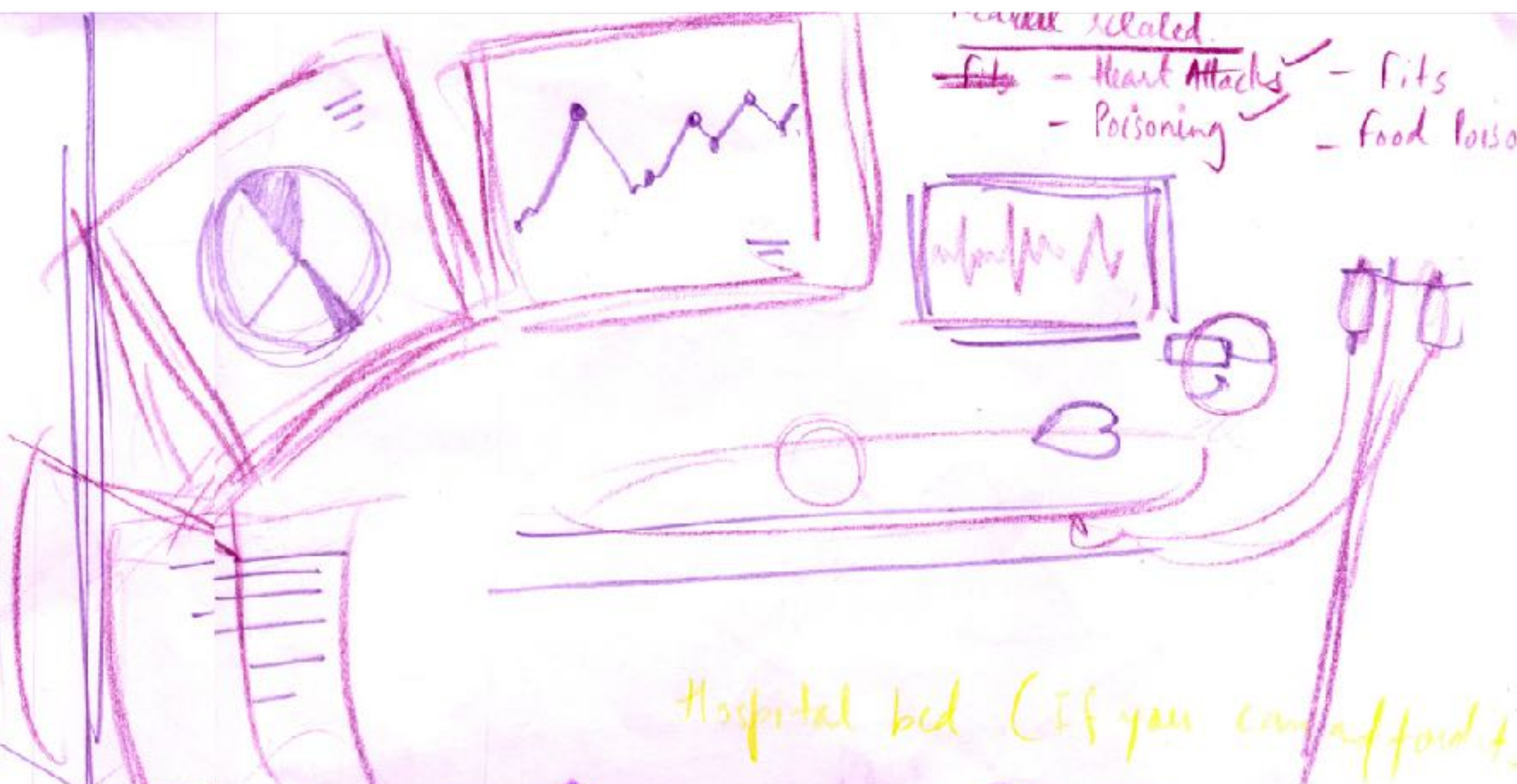


Ideation





LOOKING FROM HEIGHT
AT OUTLINES OF FALLS



You're standing at height

Death Story

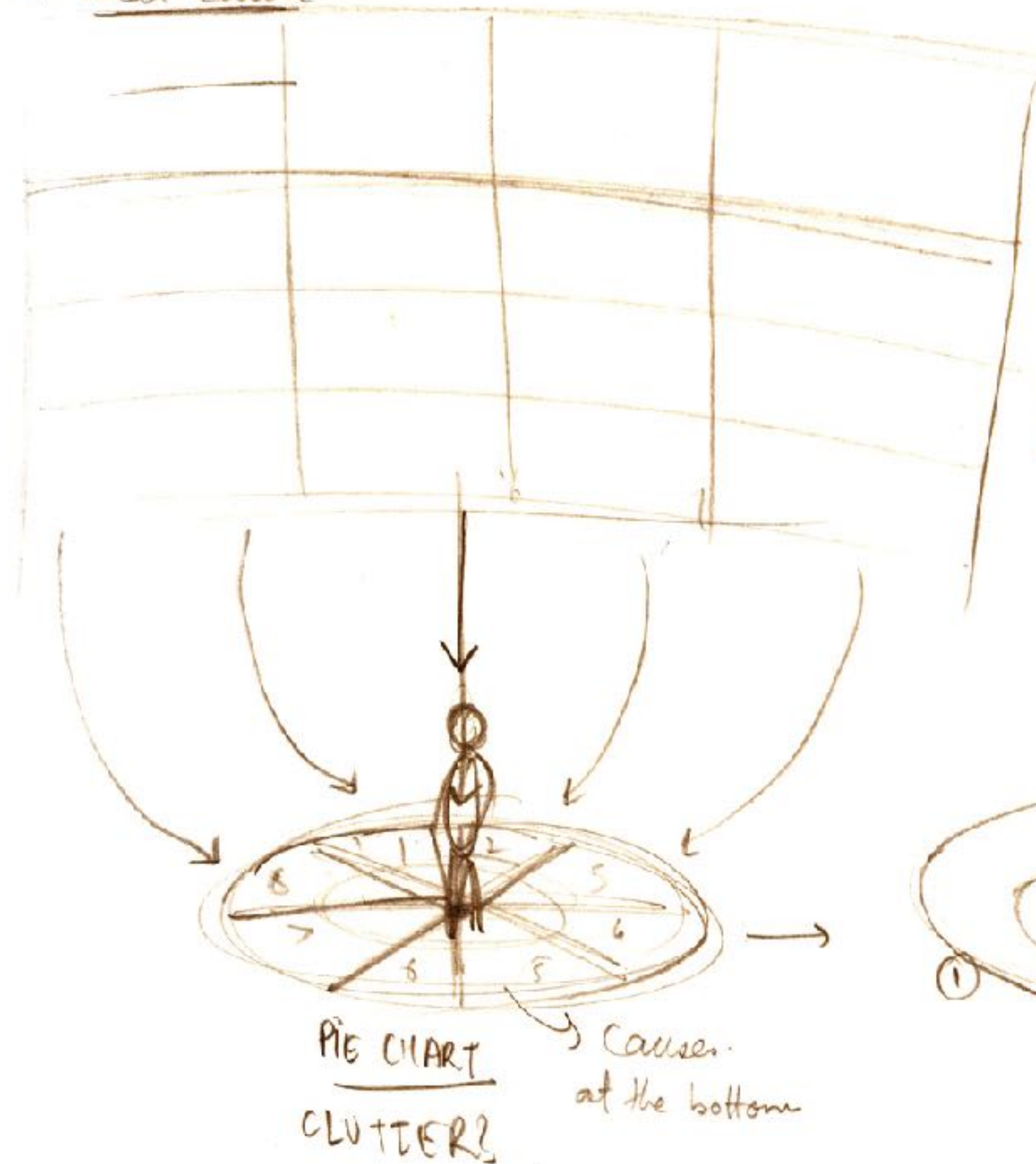
Memento mori - remember death

- Quote 1

→ Quote 2

→ ~~How~~ Meet these people who died over these years.
You can at any moment. Remember.

→ Select cause



Death scenario

- Select a cause

- Go in causal situation

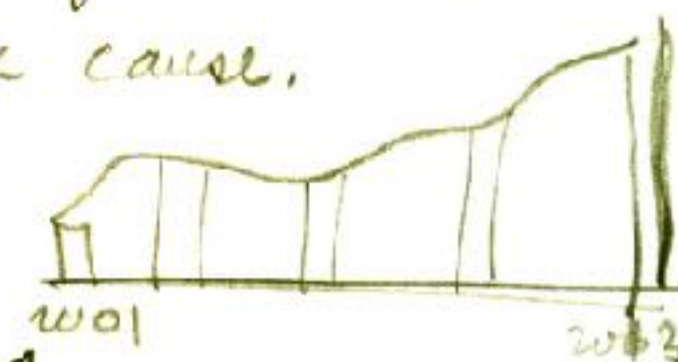
- Look at death data for various states

• Make comparisons and contrast

- Check out change over time

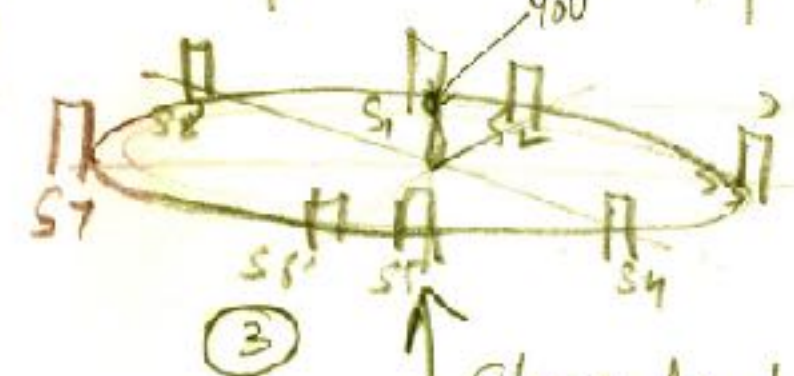
- Exit / change cause.

select a state and timeline changes

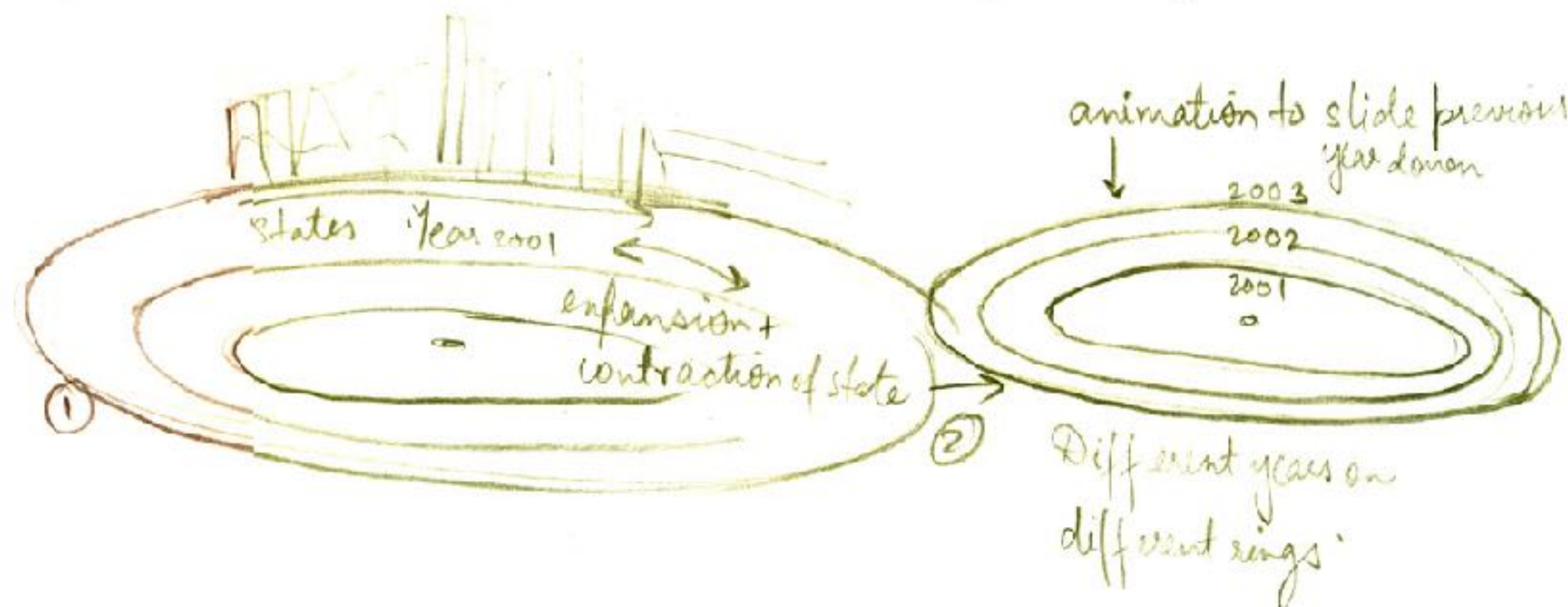


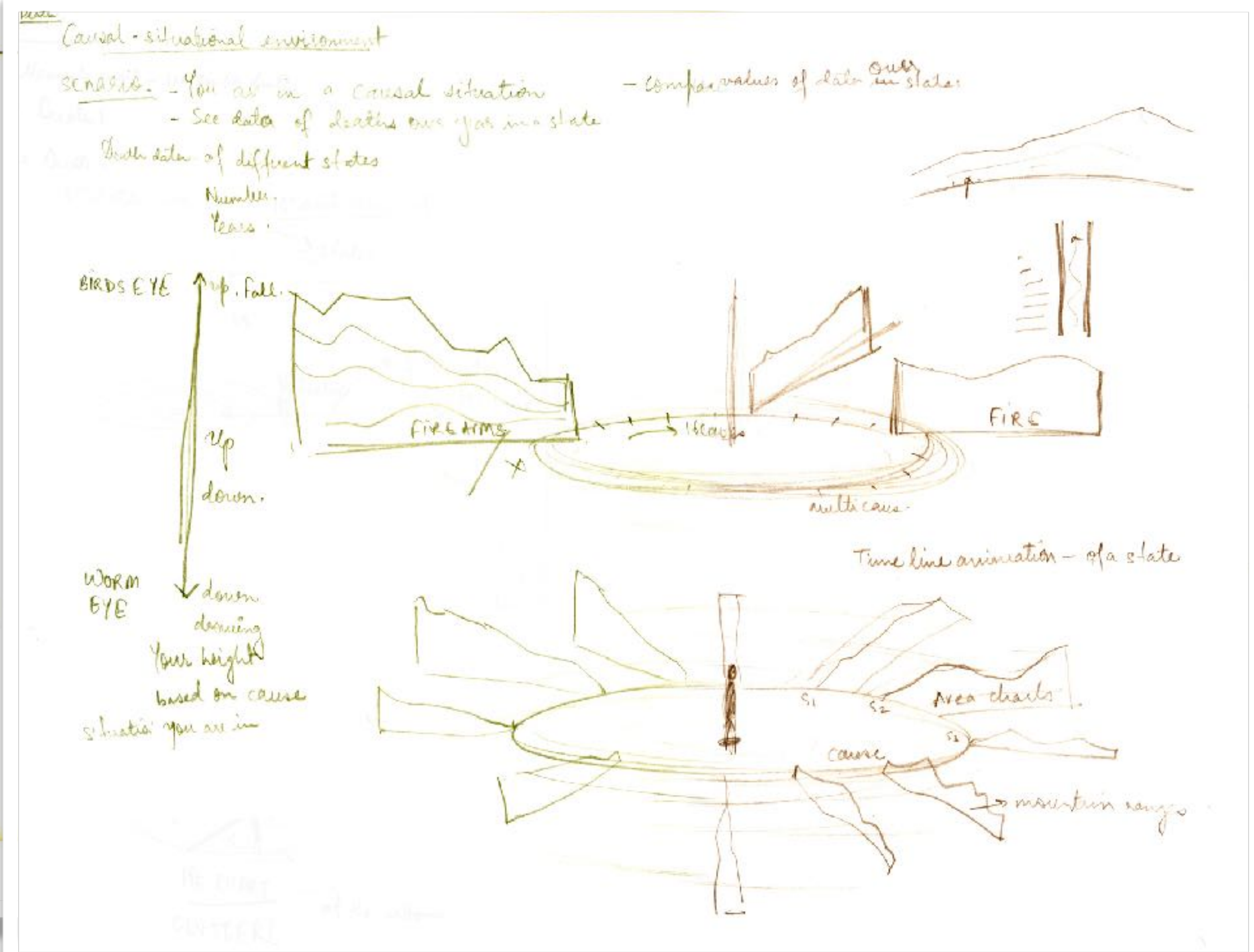
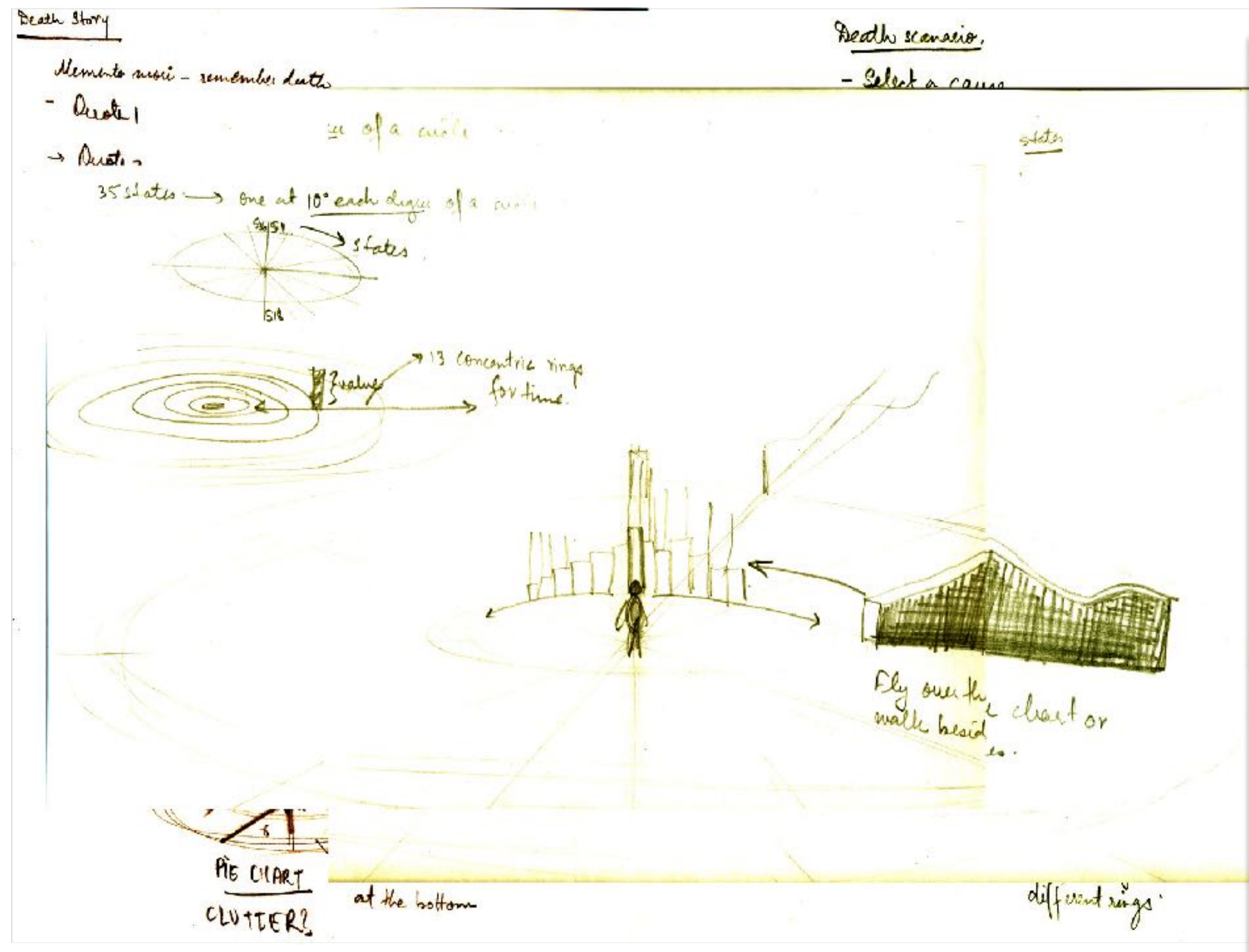
OR

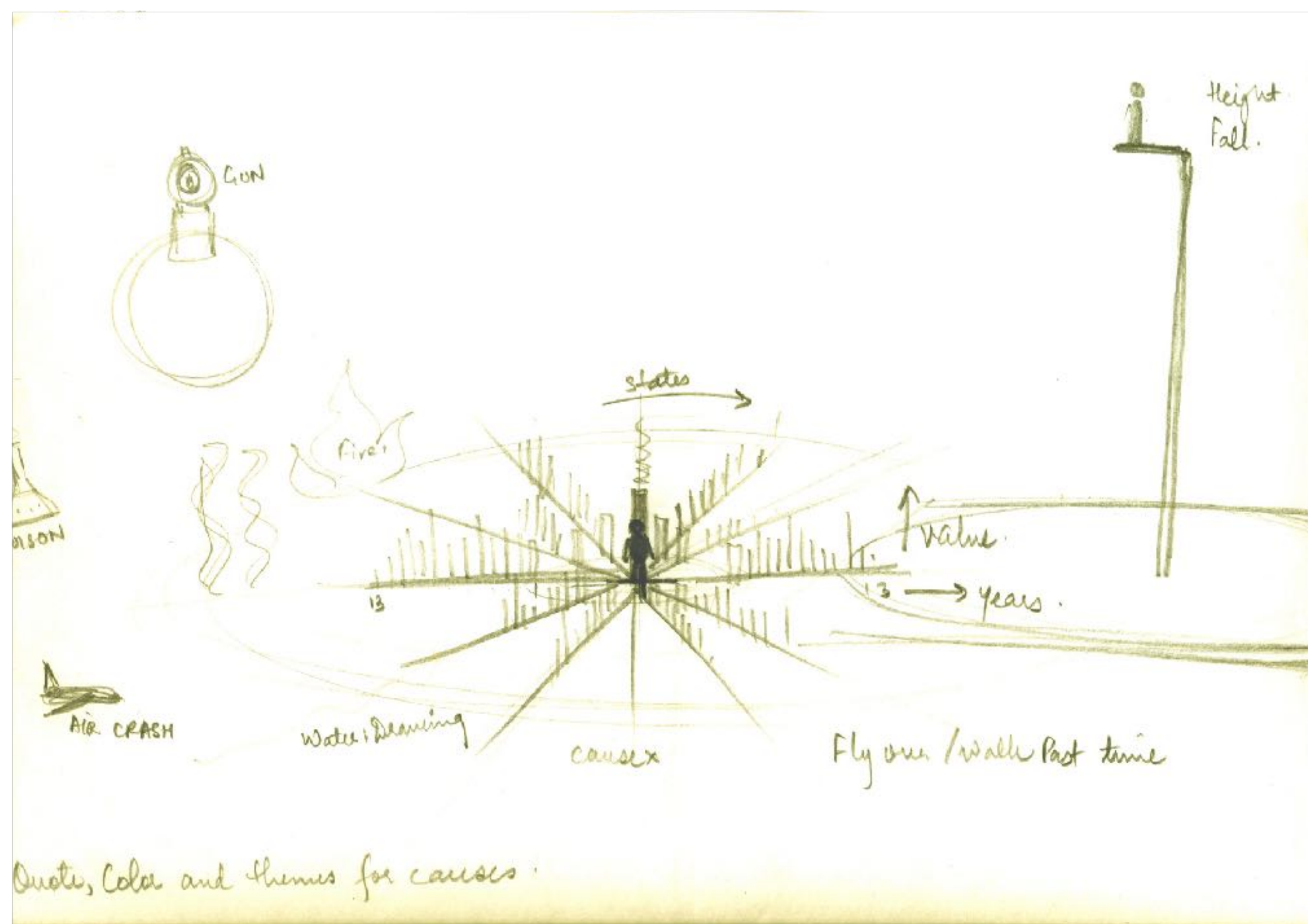
Now if you want to see go in quality situation



show dead bodies and fire and fall.

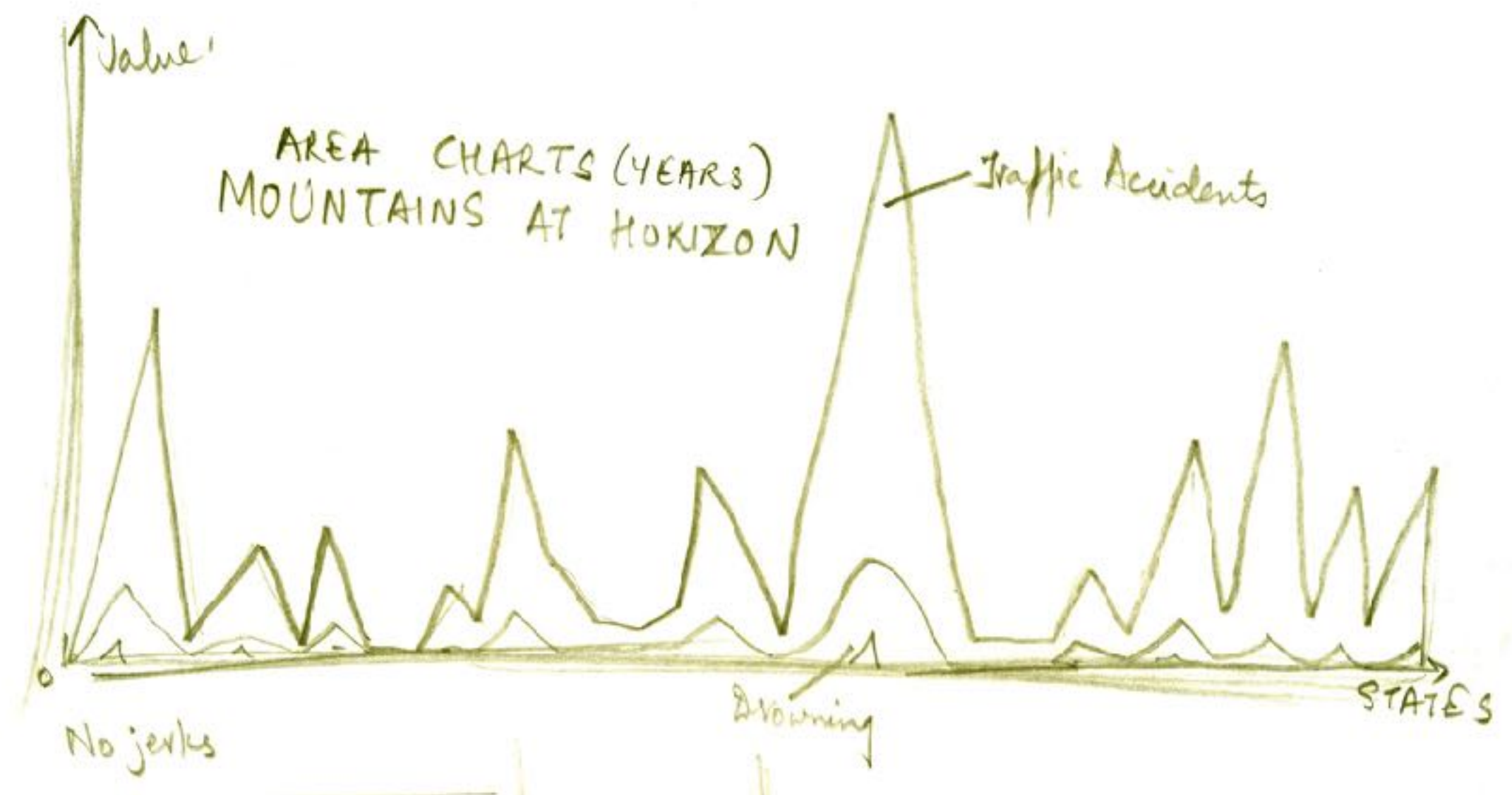




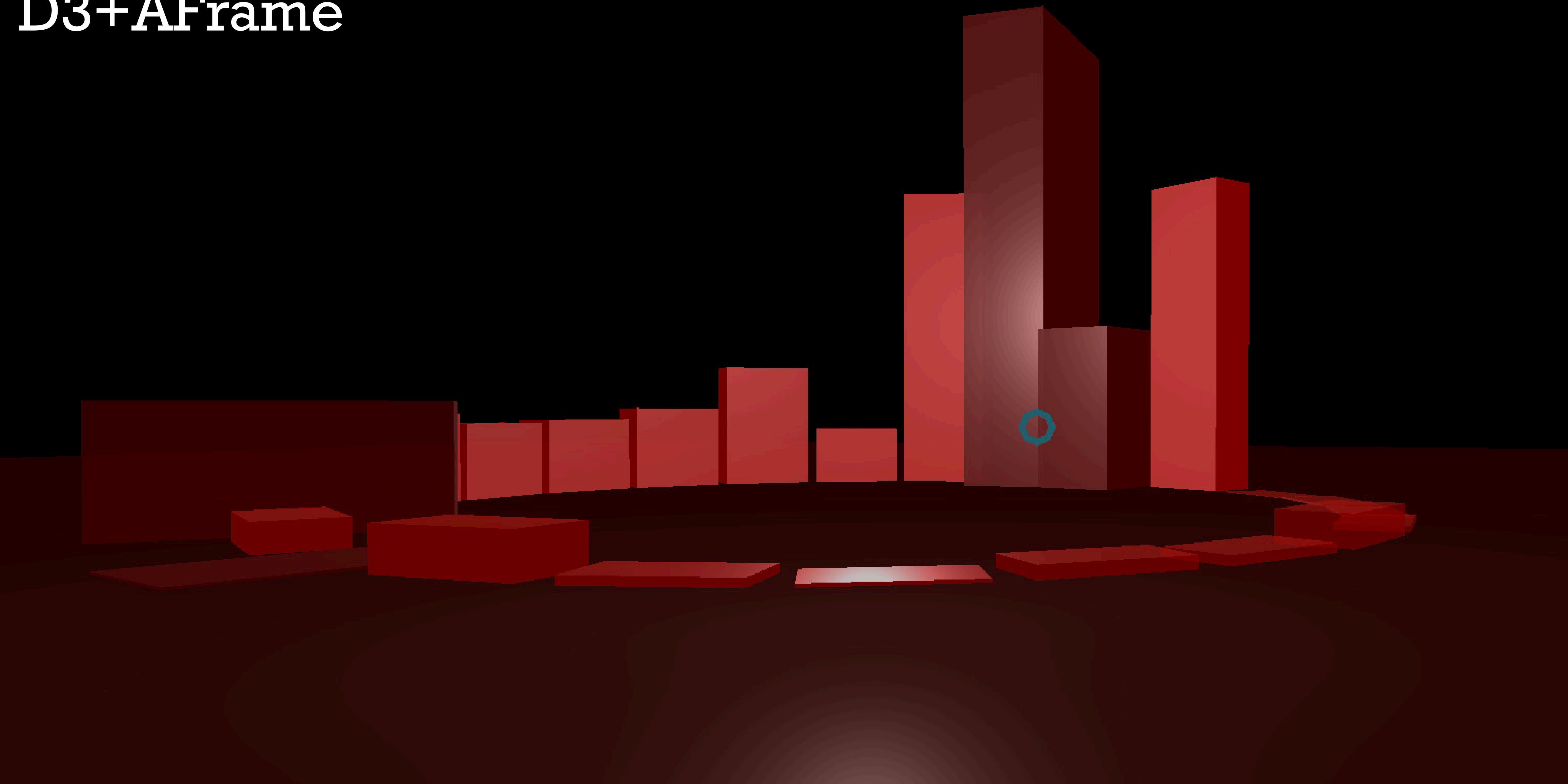


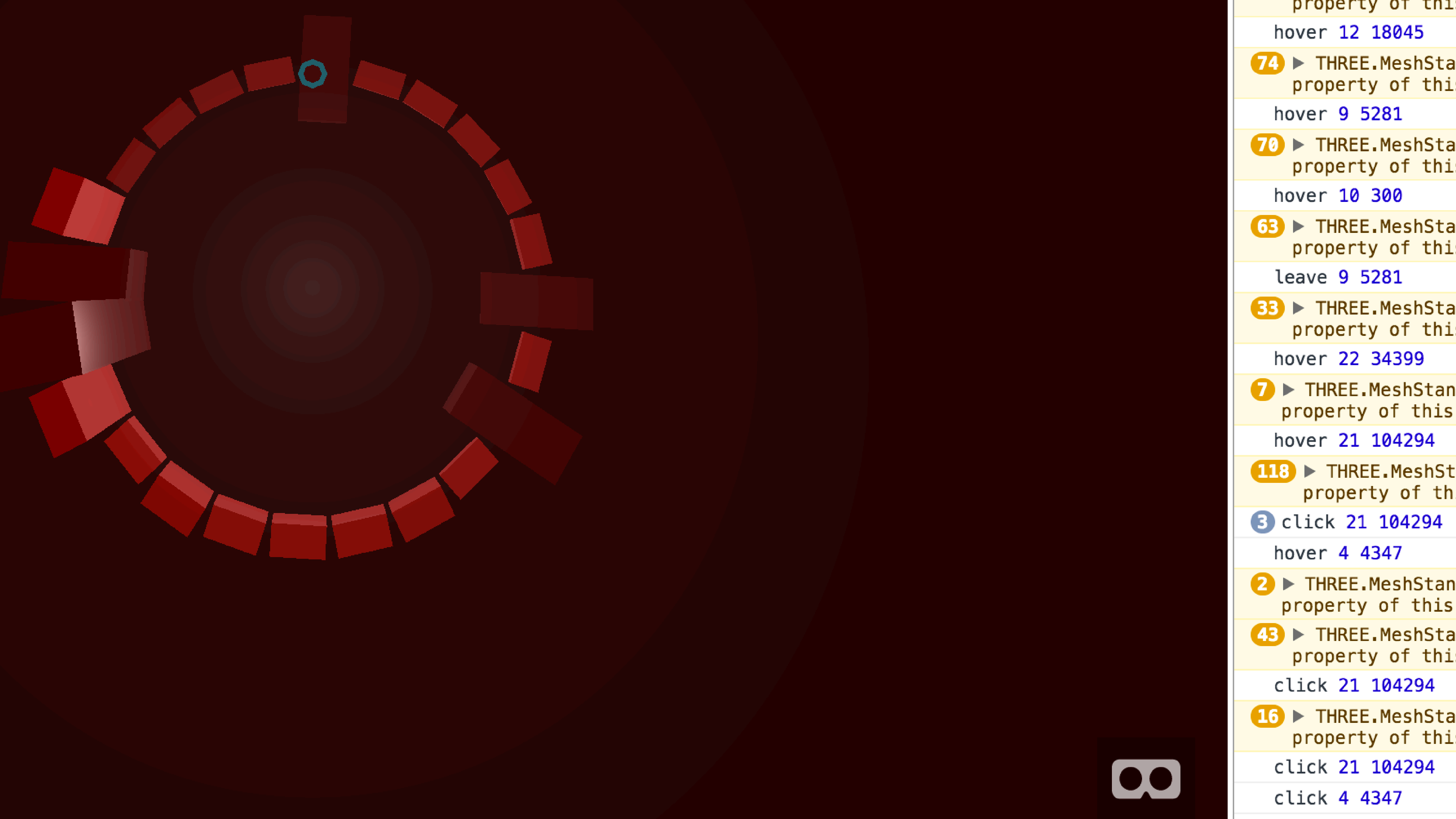
Traffic Accident - Car ride (clutch)

X has been done. (Bitch)



Prototype in WebVR: D3+AFrame





	property of thi
hover	12 18045
74	▶ THREE.MeshSta property of thi
hover	9 5281
70	▶ THREE.MeshSta property of thi
hover	10 300
63	▶ THREE.MeshSta property of thi
leave	9 5281
33	▶ THREE.MeshSta property of thi
hover	22 34399
7	▶ THREE.MeshStan property of this
hover	21 104294
118	▶ THREE.MeshSt property of th
3	click 21 104294
hover	4 4347
2	▶ THREE.MeshStan property of this
43	▶ THREE.MeshSta property of thi
click	21 104294
16	▶ THREE.MeshSta property of thi
click	21 104294
click	4 4347

Data Exploration

	A	B	C	D	E	F	G	H	I	J
1	STATE/UT	YEAR	CAUSE	CASES	MALE INJURED	FEMALE INJURED	TOTAL INJURED	MALE KILLED	FEMALE KILLED	TOTAL KILLED
2	ANDHRA PRADESH	2001	AIR-CRASH	0	0	0	0	0	0	0
3	ANDHRA PRADESH	2001	COLLAPSE OF STRUCTURE(HOUSE)	40	9	2	11	28	28	56
4	ANDHRA PRADESH	2001	COLLAPSE OF STRUCTURE(BUILDING)	18	1	2	3	29	7	36
5	ANDHRA PRADESH	2001	COLLAPSE OF STRUCTURE(DAM)	0	0	0	0	0	0	0
6	ANDHRA PRADESH	2001	COLLAPSE OF STRUCTURE(BRIDGE)	4	2	2	4	6	6	12
7	ANDHRA PRADESH	2001	COLLAPSE OF STRUCTURE(OTHERS)	84	17	8	25	80	33	113
8	ANDHRA PRADESH	2001	DROWNING (BOAT CAPSIZE)	33	6	0	6	34	7	41
9	ANDHRA PRADESH	2001	DROWNING(OTHER CASES)	1366	27	3	30	1044	362	1406
10	ANDHRA PRADESH	2001	ELECTROCUTION	611	8	10	18	573	92	665
11	ANDHRA PRADESH	2001	EXPLOSION (BOMB EXPLOSION)	8	16	4	20	13	16	29
12	ANDHRA PRADESH	2001	EXPLOSION(OTHER EXPLOSION LIKE BOILERS,	11	1	0	1	4	4	8
13	ANDHRA PRADESH	2001	FALLS (FALL FROM HEIGHT)	753	14	3	17	696	88	784
14	ANDHRA PRADESH	2001	FALL INTO PIT/MANHOLE	69	1	0	1	55	10	65
15	ANDHRA PRADESH	2001	FACTORY/MACHINE ACCIDENTS	48	9	0	9	40	17	57
16	ANDHRA PRADESH	2001	FIRE (FIREWORKS/CRACKERS)	28	16	3	19	31	8	39
17	ANDHRA PRADESH	2001	FIRE (SHORT-CIRCUIT)	292	8	2	10	264	43	307
18	ANDHRA PRADESH	2001	GAS CYLINDER/STOVE BURST	1003	21	52	73	204	732	936
19	ANDHRA PRADESH	2001	OTHER FIRE ACCIDENTS	582	6	13	19	169	390	559
20	ANDHRA PRADESH	2001	FIRE-ARMS	25	1	0	1	19	7	26
21	ANDHRA PRADESH	2001	SUDDEN DEATHS(HEART ATTACKS)	268	0	0	0	220	59	279
22	ANDHRA PRADESH	2001	EPILEPTIC FITS/GIDDINESS	50	1	0	1	34	15	49
23	ANDHRA PRADESH	2001	ABORTIONS/CHILD BIRTH	19	0	0	0	0	19	19
24	ANDHRA PRADESH	2001	INFLUENCE OF ALCOHOL	183	14	1	15	170	11	181
25	ANDHRA PRADESH	2001	KILLED BY ANIMALS	33	1	0	1	29	4	33
26	ANDHRA PRADESH	2001	MINES OR QUARY DISASTER	19	5	4	9	12	3	15
27	ANDHRA PRADESH	2001	FOOD POISONING/ACCIDENTAL INTAKE OF INSECTICIDES ETC.	159	13	3	16	140	46	186
28	ANDHRA PRADESH	2001	SPURIOUS/POISONOUS LIQUOR	23	4	1	5	20	3	23
29	ANDHRA PRADESH	2001	LEAKAGE OF POISINOUS GASES ETC.	4	0	0	0	4	0	4
30	ANDHRA PRADESH	2001	SNAKE BITE/ANIMAL BITE	643	7	5	12	508	125	633
31	ANDHRA PRADESH	2001	OTHER	556	10	9	19	398	181	579
32	ANDHRA PRADESH	2001	STAMPEDE	2	0	0	0	2	0	2
33	ANDHRA PRADESH	2001	SUFFOCATION	9	0	0	0	9	0	9
34	ANDHRA PRADESH	2001	TRAFFIC ACCIDENTS (ROAD ACCIDENTS)	27188	27725	6110	33835	6947	1427	8374
35	ANDHRA PRADESH	2001	TRAFFIC ACCIDENTS (RAIL-ROAD ACCIDENTS)	623	6	1	7	558	68	626
36	ANDHRA PRADESH	2001	OTHER RAILWAY ACCIDENTS	674	0	0	0	586	90	676
37	ANDHRA PRADESH	2001	OTHER CAUSES (PLEASE SPECIFY)	1096	530	191	721	880	361	1241
38	ANDHRA PRADESH	2001	CAUSES NOT KNOWN	486	113	72	185	509	179	688
39	ANDHRA PRADESH	2001	TOTAL	37010	28592	6501	35093	14315	4441	18756
40	ANDHRA PRADESH	2001	TOTAL COLLAPSE	146	29	14	43	143	74	217
41	ANDHRA PRADESH	2001	TOTAL DROWNING	1399	33	3	36	1078	369	1447
42	ANDHRA PRADESH	2001	TOTAL EXPLOSION	19	17	4	21	17	20	37
43	ANDHRA PRADESH	2001	TOTAL FALLS	822	15	3	18	751	98	849
44	ANDHRA PRADESH	2001	TOTAL FIRE	1905	51	70	121	668	1173	1841
45	ANDHRA PRADESH	2001	TOTAL SUDDEN DEATHS	520	15	1	16	424	104	528
46	ANDHRA PRADESH	2001	TOTAL POISONING	1385	34	18	52	1070	355	1425
47	ANDHRA PRADESH	2001	TOTAL TRAFFIC ACCIDENTS	28485	27731	6111	33842	8091	1585	9676

[illegible]

2	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35					
3																				
4	MAHARASHTRA	MANIPUR	MEGHALAYA	MIZORAM	NAGALAND	ODISHA	PUDUCHERRY	PUNJAB	RAJASTHAN	SIKKIM	TAMIL NADU	TRIPURA	UTTAR PRADESH	UTTARAKHAND	WEST BENGAL	TOTAL (STATES)	TOTAL (UTS)	TOTAL (ALL INDIA)	Grand Total	Sparklines
5	4347	11	11	2	0	94	8	158	291	0	220	16	733	67	286	9885	288	10173	30519	
6	38	0	10	0	3	0	0	10	16	0	14	0	20	25	2	290	1	291	873	
7	12384	512	466	189	28	19548	120	2218	18512	144	14030	738	15201	996	21468	208977	10142	219119	657357	
8	0	0	0	0	0	0	0	1	3	0	7	1	5	0	0	1167	14	1181	2404	
9	12	0	2	0	0	1	0	2	10	1	62	0	38	0	1	3615	250	3865	7953	
10	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	438	1	439	892	
11	105	0	0	2	0	8	1	13	42	0	60	0	143	3	8	12717	256	12973	26643	
12	139	2	6	0	0	30	3	23	53	7	159	1	237	17	14	15771	428	16199	33638	
13	28	0	5	3	0	12	0	10	10	1	319	11	61	8	221				1139	
14	566	7	5	18	0	24	0	119	70	5	497	7	453	19	65				3642	
15	4	0	0	0	0	0	0	8	6	6	19	0	10	10	22				425	
16	1342	0	4	4	0	86	28	257	679	4	729	2	2623	83	121				12276	
17	1672	65	32	10	2	200	12	462	958	43	1357	18	1412	91	309				14959	
18	298	11	24	74	4	361	6	79	79	0	579	6	1647	41	271	9869	104	9973	29919	
19	5040	11	27	23	3	361	78	298	1141	13	721	37	390	55	424	313457	3943	317400	654103	
20	59564	130	363	187	63	6573	1057	5424	17965	235	16041	722	9334	1726	6442				298097	
21	14834	116	120	62	21	2183	330	3154	7301	59	5033	301	5931	467	1468	97160	2662	99822	299466	
22	18045	5	62	4	0	537	1930	980	1724	14	2937	62	873	92	238	40838	2310	43148	129444	
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25	160	1	0	0	0	17	0	11	82	7	123	0	271	3	93				1393	
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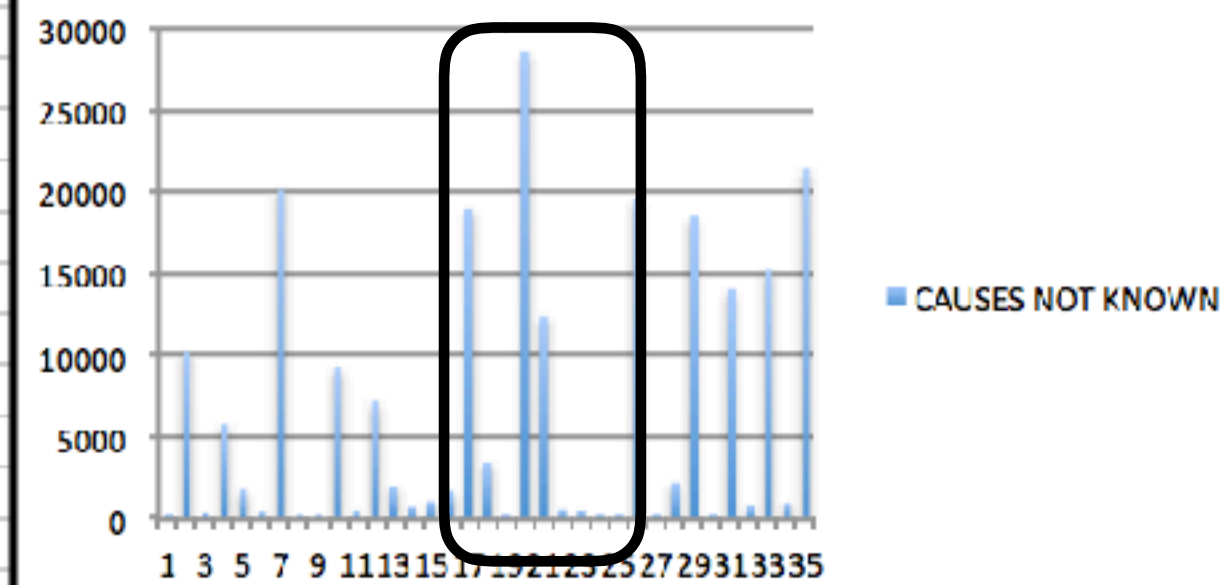
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1		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
2																						
3	Sum of TOTAL KILLED	Column Labels																				
4	Row Labels	A & N ISLANDS	ANDHRA PRADESH	ARUNACHAL PRADESH	ASSAM	BIHAR	CHANDIGARH	CHHATTISGARH	D & N HAVELI	DAMAN & DIU	DELHI(UT)	GOA	GUJARAT	HARYANA	HIMACHAL PRADESH	JAMMU & KASHMIR	JHARKHAND	KARNATAKA	KERALA	LAKE SHADWEEP	MADHYA PRADESH	MAHARASHTRA
5	▶ AIR-CRASH	0	28	13	0	0	0	9	0	0	0	30	21	12	6	14	4	7	1	1	7	38
6	▶ STAMPEDE	0	355	0	1	22	0	151	0	0	11	1	66	126	110	0	13	118	106	0	203	351
7	▶ MINES OR QUARY DISASTER	4	297	3	1	31	0	477	0	1	2	18	179	89	2	15	202	79	151	0	1667	297
8	▶ TOTAL EXPLOSION	0	928	7	217	282	4	498	2	0	300	13	261	134	14	794	168	151	96	0	440	881
9	▶ ABORTIONS/CHILD BIRTH	4	162	1	82	104	19	367	8	3	246	11	422	162	22	40	96	136	133	0	1911	4347
10	▶ FACTORY/MACHINE ACCIDENTS	2	595	5	73	179	4	665	63	14	599	57	1531	497	107	69	248	338	198	0	1050	1227
11	▶ KILLED BY ANIMALS	20	576	67	969	135	6	843	4	2	54	11	740	135	101	32	504	645	401	0	1113	1554
12	▶ SPURIOUS/POISONOUS LIQUOR	0	1091	7	80	737	12	237	0	5	145	0	947	299	76	58	262	1469	15	0	404	391
13	▶ SUFFOCATION	7	196	5	5	242	18	5316	2	1	118	13	796	277	127	30	348	125	178	0	4828	986
14	▶ FALL INTO PIT/MANHOLE	38	1697	9	42	201	20	813	12	7	351	236	3119	588	43	38	454	315	817	0	2109	5281
15	▶ FIRE-ARMS	0	129	51	226	276	7	1050	0	0	440	2	52	212	18	1668	155	340	9	0	1508	300
16	▶ TOTAL COLLAPSE	22	3076	93	327	1479	22	1004	13	4	840	118	3632	567	229	158	1044	1765	850	4	2952	3870
17	▶ EPILEPTIC FITS/GIDDINESS	12	1906	5	8	317	21	1035	26	30	290	52	6331	686	99	47	213	1284	1197	1	2085	18045
18	▶ GAS CYLINDER/STOVE BURST	82	7951	7	160	1352	131	263	96	28	1409	138	8914	1617	125	110	566	3897	376	1	2415	4093
19	▶ INFLUENCE OF ALCOHOL	37	3347	46	36	962	198	2887	58	30	1376	126	504	2539	767	112	768	3744	1133	0	4992	16097
20	▶ SNAKE BITE/ANIMAL BITE	8	10191	4	78	611	5	10042	58	0	148	41	6372	656	174	38	369	7793	583	0	25114	14301
21	▶ ELECTROCUTION	48	13750	42	738	1657	95	5354	80	50	2058	265	6594	3485	166	214	981	4499	2537	1	15828	14834
22	▶ FOOD POISONING/ACCIDENTAL INTAKE OF INSECTICIDES ETC	13	3122	17	318	3780	27	6702	3	4	957	31	5252	3659	1154	163	1788	1872	259	0	27123	17267
23	▶ TOTAL FALLS	156	14885	231	319	1207	265	4829	175	93	4595	1297	14005	2733	3248	671	1442	6092	7965	1	10776	26485
24	▶ CAUSES NOT KNOWN	171	10254	354	5806	1779	435	20192	122	23	9269	472	7211	2032	681	1088	1680	18999	3449	2	28546	12384
25	▶ TOTAL FIRE	241	23054	117	1707	5800	279	9417	134	115	5022	584	31355	4474	796	400	3225	18729	3630	5	33245	67838
26	▶ TOTAL SUDDEN DEATHS	393	10878	180	700	2431	770	7131	262	158	4676	414	28653	8416	2613	974	1810	11943	17815	10	18418	104294
27	▶ TOTAL POISONING	49	26451	245	2610	7710	169	20677	62	15	3010	142	17570	8867	2453	602	3302	25032	2081	0	58483	34399
28	▶ TOTAL DROWNING	438	27809	279	4438	4992	67	18213	193	246	1936	2254	21391	5857	1653	640	3170	23408	19871	26	52564	64902
29	▶ TOTAL TRAFFIC ACCIDENTS	297	187690	1609	27041	59619	1760	41854	660	287	37713	4352	95458	65532	12521	13603	24403	117882	51809	5	105747	222538
30	TOTAL	3850	335694	3438	46421	91930	4722	161097	2058	1305	81441	11138	250602	113029	26934	22034	46276	243623	118341	58	383712	727452
31	Grand Total	5892	686112	6835	92403	2E+05	9056	321123	4091	2421	157006	21816	511978	226680	54239	43612	93491	494285	234001	115	787240	1364452

	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO		
1																						
2	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35							
3																						
4	MAHARASHTRA	MANIPUR	MEGHALAYA	MIZORAM	NAGALAND	ODISHA	PUDUCHERRY	PUNJAB	RAJASTHAN	SIKKIM	TAMIL NADU	TRIPURA	UTTAR PRADESH	UTTARAKHAND	WEST BENGAL	TOTAL (STATES)	TOTAL (UTS)	TOTAL (ALL INDIA)	Grand Total			
5	38	0	10	0	3	0	0	10	16	0	14	0	20	25	2	290	1	291	873			
6	351	0	0	0	0	19	0	31	216	4	231	0	87	9	12	2232	11	2243	6729			
7	297	4	100	16	9	323	0	71	1108	0	124	0	320	60	60	5703	7	5710	17130			
8	881	140	18	9	4	45	0	97	440	8	361	35	902	69	689	7701	306	8007	24021			
9	4347	11	11																			

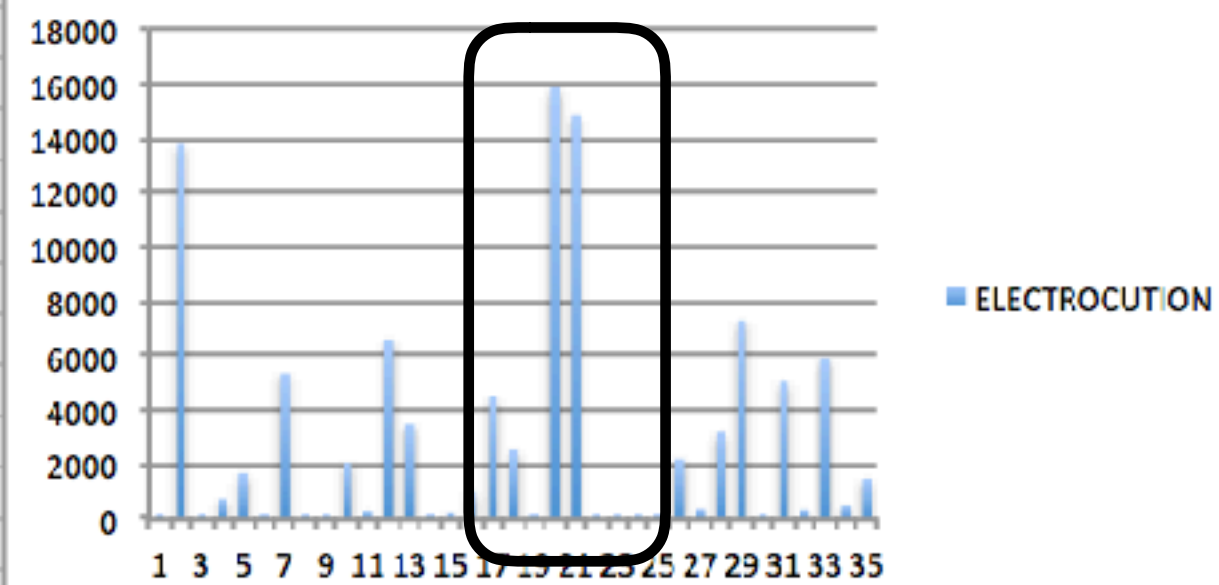
Snake Bite/Animal Bite	Stampede	Suffocation	Total	Total Collapse	Total Drowning	Total Explosion	Total Falls	Total Fire	Total Poisoning	Total Sudden Deaths	Total Traffic Accidents
Lakshadweep	Lakshadweep	Lakshadweep	Lakshadweep	Nagaland	Lakshadweep	Lakshadweep	Lakshadweep	Lakshadweep	Lakshadweep	Lakshadweep	Lakshadweep
Nagaland	Nagaland	Nagaland	Nagaland	Lakshadweep	Chandigarh	Daman & Diu	Nagaland	Nagaland	Nagaland	Nagaland	Daman & Diu
Daman & Diu	Daman & Diu	Daman & Diu	Daman & Diu	Daman & Diu	Nagaland	A & N Islands	Manipur	Manipur	Daman & Diu	Mizoram	A & N Islands
Manipur	Manipur	D & N Haveli	D & N Haveli	D & N Haveli	Manipur	Puducherry	Daman & Diu	Mizoram	A & N Islands	Manipur	D & N Haveli
Meghalaya	Meghalaya	Arunachal Pradesh	Mizoram	A & N Islands	D & N Haveli	D & N Haveli	Tripura	Sikkim	Mizoram	Sikkim	Nagaland
Sikkim	Arunachal Pradesh	Assam	Sikkim	Chandigarh	Daman & Diu	Chandigarh	A & N Islands	Daman & Diu	D & N Haveli	Daman & Diu	Sikkim
Arunachal Pradesh	Chandigarh	Tripura	Manipur	Mizoram	Sikkim	Nagaland	D & N Haveli	Arunachal Pradesh	Manipur	Arunachal Pradesh	Mizoram
Chandigarh	Mizoram	Sikkim	Arunachal Pradesh	Tripura	Arunachal Pradesh	Arunachal Pradesh	Mizoram	D & N Haveli	Meghalaya	Meghalaya	Arunachal Pradesh
Mizoram	A & N Islands	Mizoram	A & N Islands	Puducherry	Mizoram	Sikkim	Meghalaya	Meghalaya	Sikkim	D & N Haveli	Manipur
A & N Islands	Tripura	A & N Islands	Meghalaya	Meghalaya	Meghalaya	Mizoram	Arunachal Pradesh	A & N Islands	Goa	A & N Islands	Chandigarh
Tripura	Jammu & Kashmir	Meghalaya	Chandigarh	Sikkim	A & N Islands	Goa	Chandigarh	Chandigarh	Chandigarh	Goa	Meghalaya
Jammu & Kashmir	D & N Haveli	Puducherry	Tripura	Manipur	Jammu & Kashmir	Himachal Pradesh	Assam	Tripura	Arunachal Pradesh	Tripura	Tripura
Goa	Puducherry	Goa	Goa	Arunachal Pradesh	Tripura	Meghalaya	Sikkim	Jammu & Kashmir	Tripura	Assam	Puducherry
D & N Haveli	Goa	Chandigarh	Puducherry	Goa	Puducherry	Tripura	Puducherry	Puducherry	Puducherry	Chandigarh	Goa
Uttarakhand	Assam	Manipur	Jammu & Kashmir	Jammu & Kashmir	Himachal Pradesh	Odisha	Jammu & Kashmir	Goa	Jammu & Kashmir	Jammu & Kashmir	Uttarakhand
Assam	Sikkim	Jammu & Kashmir	Uttarakhand	Himachal Pradesh	Uttarakhand	Uttarakhand	Uttarakhand	Himachal Pradesh	Kerala	Uttarakhand	Himachal Pradesh
Delhi (UT)	Uttarakhand	Uttarakhand	Himachal Pradesh	Uttarakhand	Delhi (UT)	Kerala	Bihar	Uttarakhand	Uttarakhand	Jharkhand	Jammu & Kashmir
Himachal Pradesh	Delhi (UT)	Delhi (UT)	Jharkhand	Assam	Goa	Punjab	Goa	Assam	Himachal Pradesh	Bihar	Jharkhand
Puducherry	Total (UTs)	Karnataka	Assam	Odisha	Jharkhand	Haryana	Jharkhand	Jharkhand	Assam	Odisha	Assam
Jharkhand	West Bengal	Himachal Pradesh	Delhi (UT)	Haryana	Total (UTs)	Manipur	West Bengal	Kerala	Delhi (UT)	Himachal Pradesh	Delhi (UT)
Total (UTs)	Jharkhand	Total (UTs)	Punjab	West Bengal	Assam	Karnataka	Punjab	Punjab	Jharkhand	Delhi (UT)	Chhattisgarh
Punjab	Odisha	Kerala	Bihar	Delhi (UT)	Bihar	Jharkhand	Haryana	Haryana	Total (UTs)	Puducherry	Punjab
Kerala	Bihar	Andhra Pradesh	Total (UTs)	Kerala	Punjab	Assam	Himachal Pradesh	Delhi (UT)	Bihar	Chhattisgarh	Total (UTs)
Bihar	Punjab	West Bengal	Haryana	Punjab	Haryana	Gujarat	Uttar Pradesh	Odisha	Haryana	Uttar Pradesh	Odisha
Haryana	Gujarat	Bihar	Odisha	Total (UTs)	West Bengal	Bihar	Delhi (UT)	Bihar	Punjab	West Bengal	Kerala
Uttar Pradesh	Uttar Pradesh	Tamil Nadu	Kerala	Chhattisgarh	Odisha	Delhi (UT)	Odisha	Total (UTs)	Uttar Pradesh	Haryana	Bihar
Rajasthan	Kerala	Haryana	Chhattisgarh	Jharkhand	Uttar Pradesh	Total (UTs)	Chhattisgarh	West Bengal	Odisha	Punjab	Haryana
West Bengal	Himachal Pradesh	Jharkhand	West Bengal	Bihar	Tamil Nadu	Tamil Nadu	Total (UTs)	Chhattisgarh	Gujarat	Andhra Pradesh	Gujarat
Odisha	Karnataka	Odisha	Rajasthan	Karnataka	Chhattisgarh	Rajasthan	Karnataka	Rajasthan	Rajasthan	Rajasthan	West Bengal
Gujarat	Haryana	Gujarat	Karnataka	Rajasthan	Rajasthan	Madhya Pradesh	Tamil Nadu	Uttar Pradesh	Chhattisgarh	Total (UTs)	Rajasthan
Tamil Nadu	Chhattisgarh	Punjab	Gujarat	Madhya Pradesh	Kerala	Chhattisgarh	Kerala	Karnataka	West Bengal	Karnataka	Madhya Pradesh
Karnataka	Madhya Pradesh	Maharashtra	Uttar Pradesh	Andhra Pradesh	Gujarat	West Bengal	Rajasthan	Andhra Pradesh	Karnataka	Tamil Nadu	Karnataka
Chhattisgarh	Rajasthan	Rajasthan	Tamil Nadu	Tamil Nadu	Karnataka	Jammu & Kashmir	Madhya Pradesh	Tamil Nadu	Andhra Pradesh	Kerala	Tamil Nadu
Andhra Pradesh	Tamil Nadu	Uttar Pradesh	Andhra Pradesh	Gujarat	Andhra Pradesh	Maharashtra	Gujarat	Tamil Nadu	Tamil Nadu	Madhya Pradesh	Andhra Pradesh
Maharashtra	Maharashtra	Madhya Pradesh	Madhya Pradesh	Maharashtra	Madhya Pradesh	Uttar Pradesh	Andhra Pradesh	Madhya Pradesh	Maharashtra	Gujarat	Uttar Pradesh
Madhya Pradesh	Andhra Pradesh	Chhattisgarh	Maharashtra	Uttar Pradesh	Maharashtra	Andhra Pradesh	Maharashtra	Maharashtra	Madhya Pradesh	Maharashtra	Maharashtra

Causes

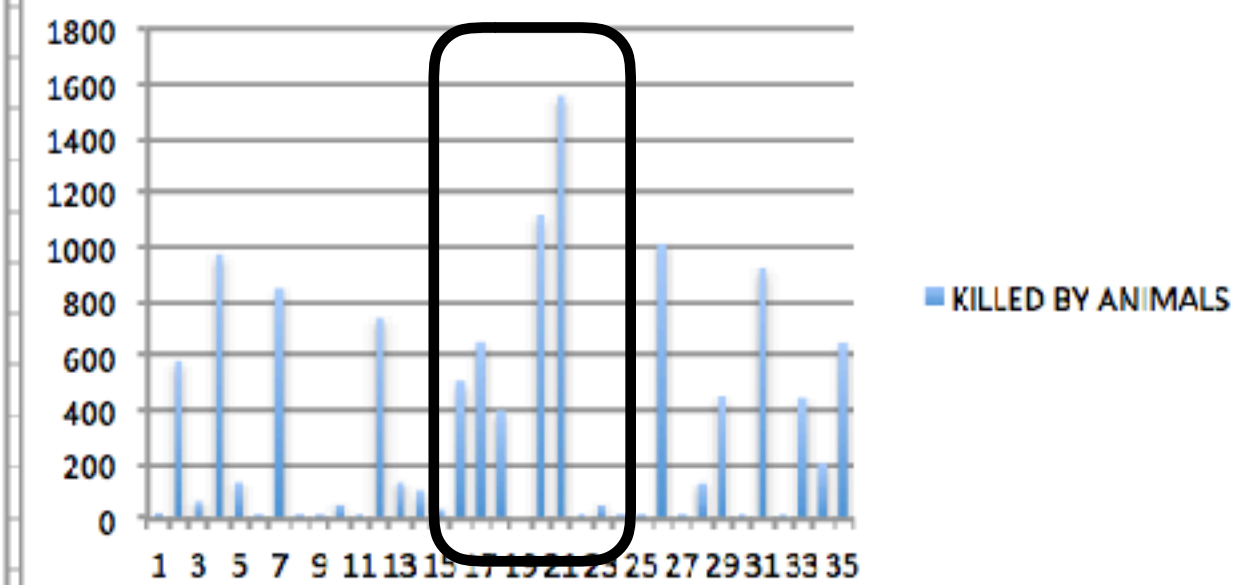
CAUSES NOT KNOWN



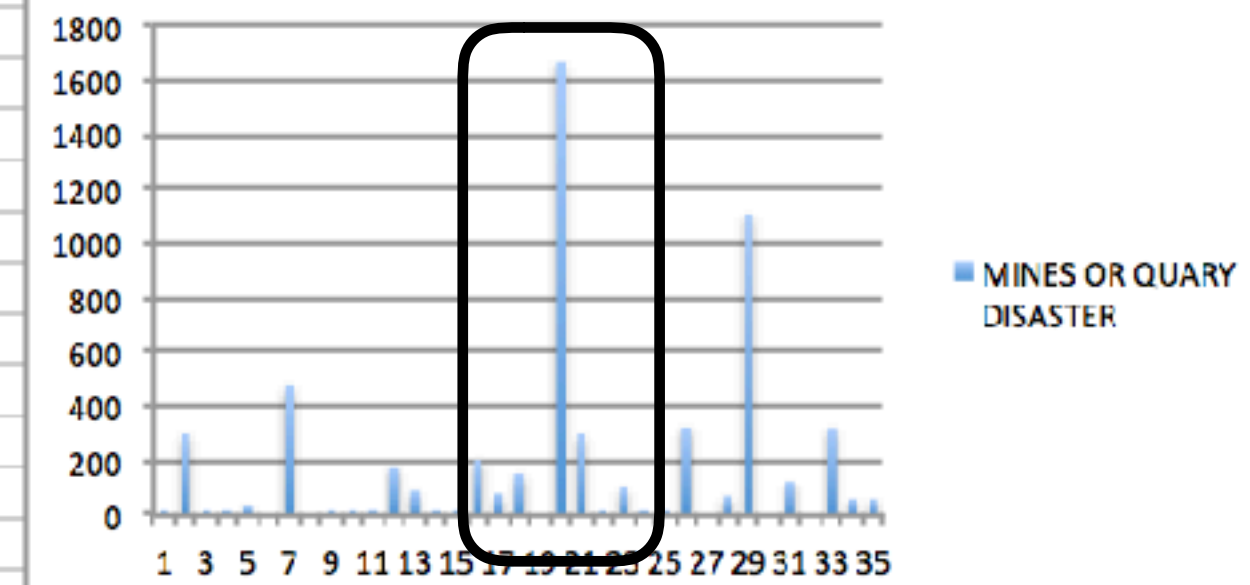
ELECTROCUTION



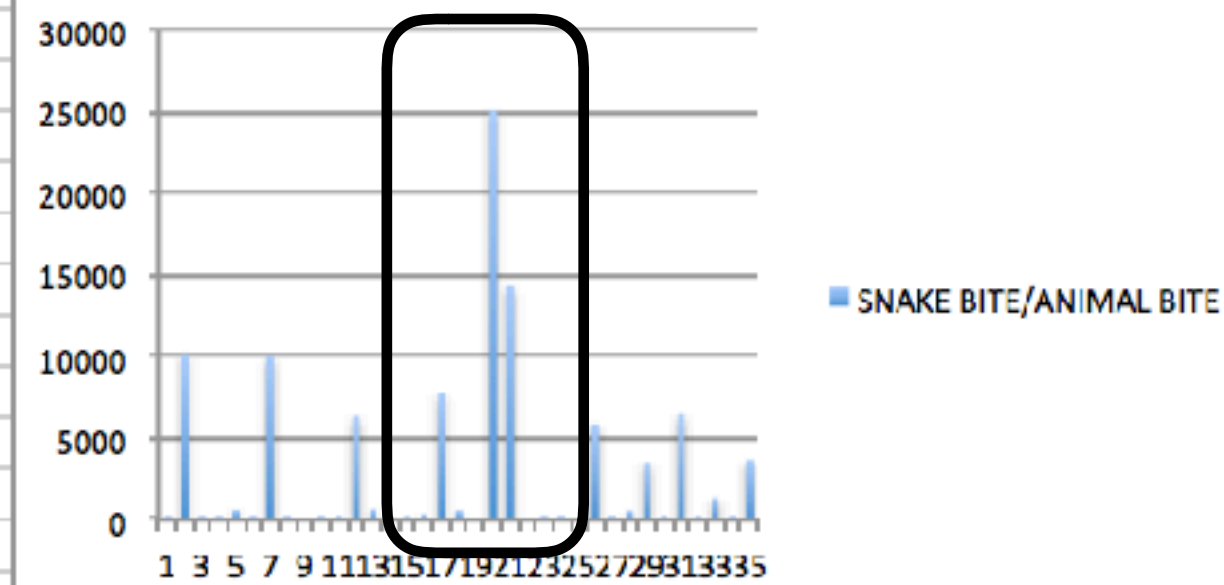
KILLED BY ANIMALS



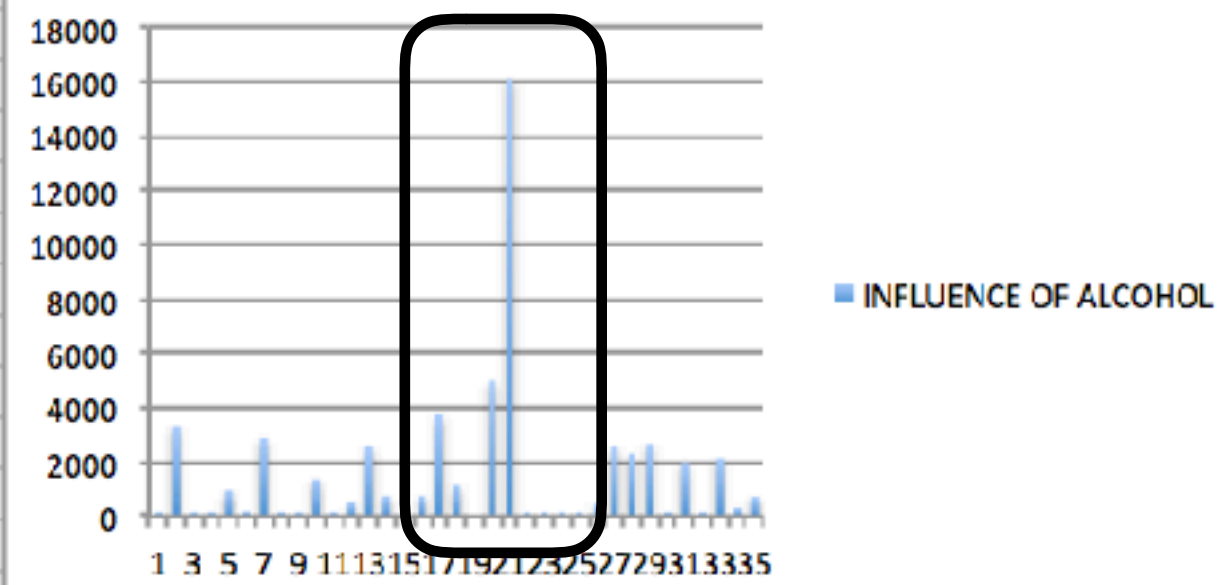
MINES OR QUARY DISASTER



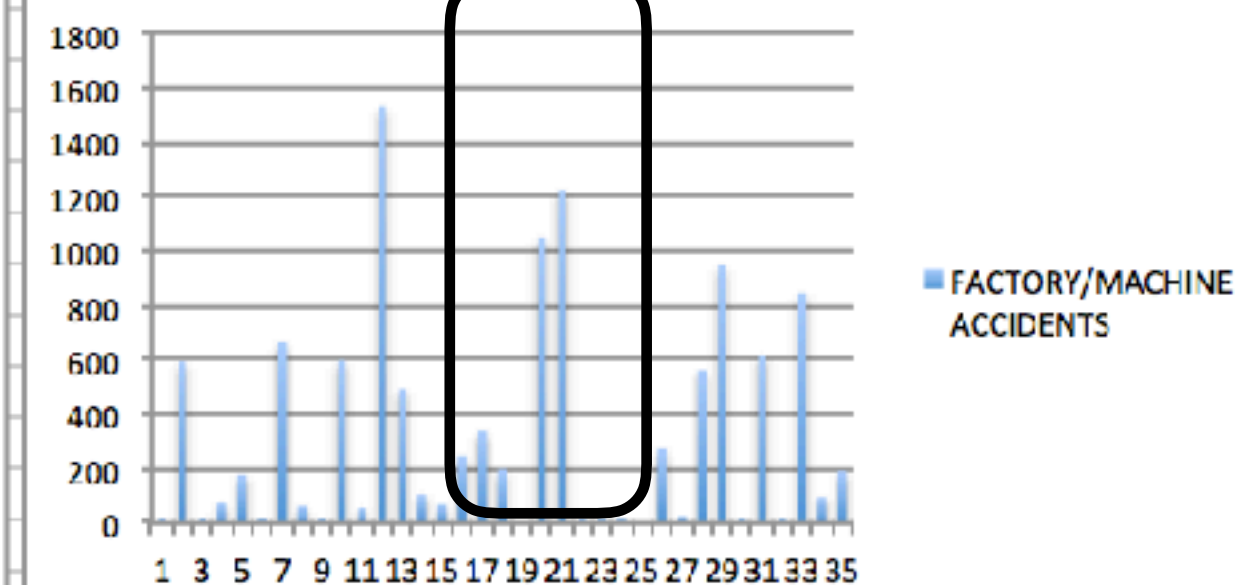
SNAKE BITE/ANIMAL BITE



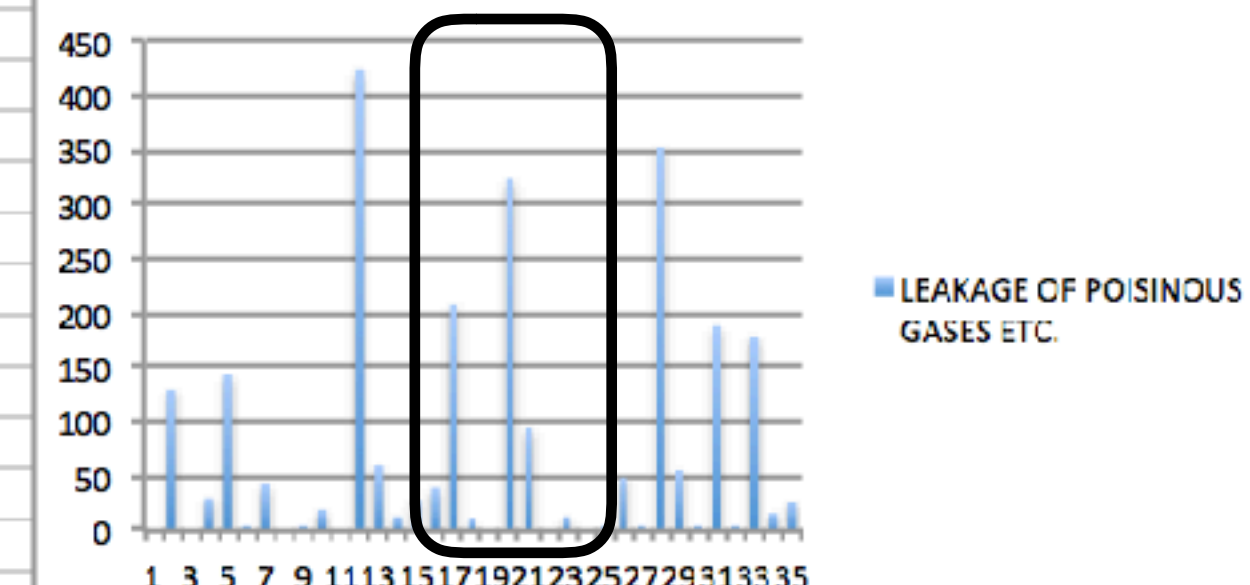
INFLUENCE OF ALCOHOL



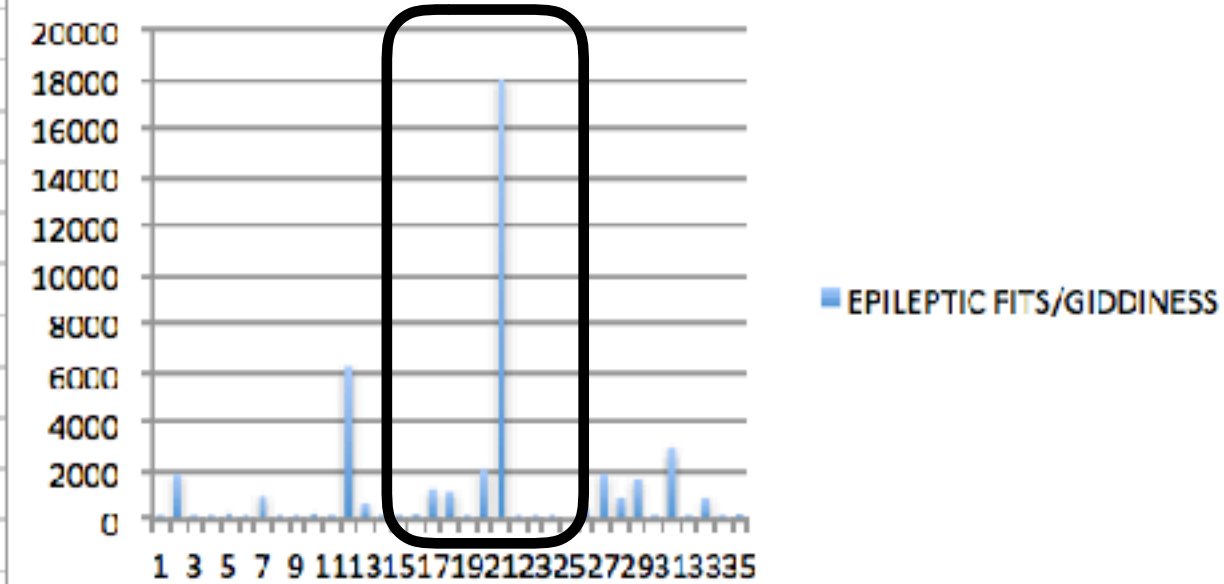
FACTORY/MACHINE ACCIDENTS



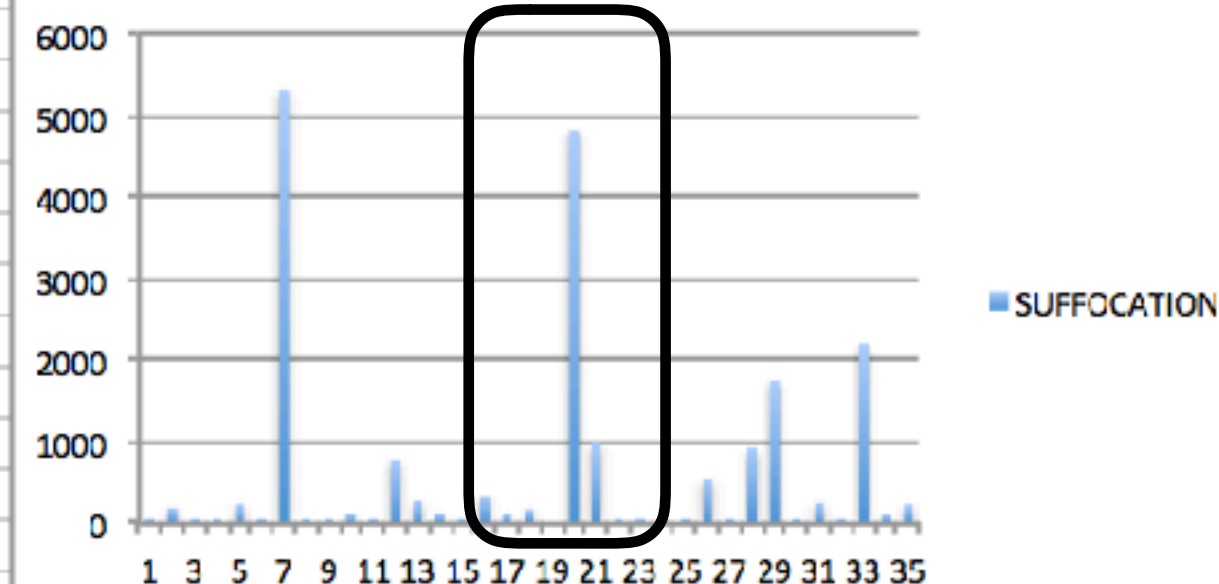
LEAKAGE OF POISINOUS GASES ETC.



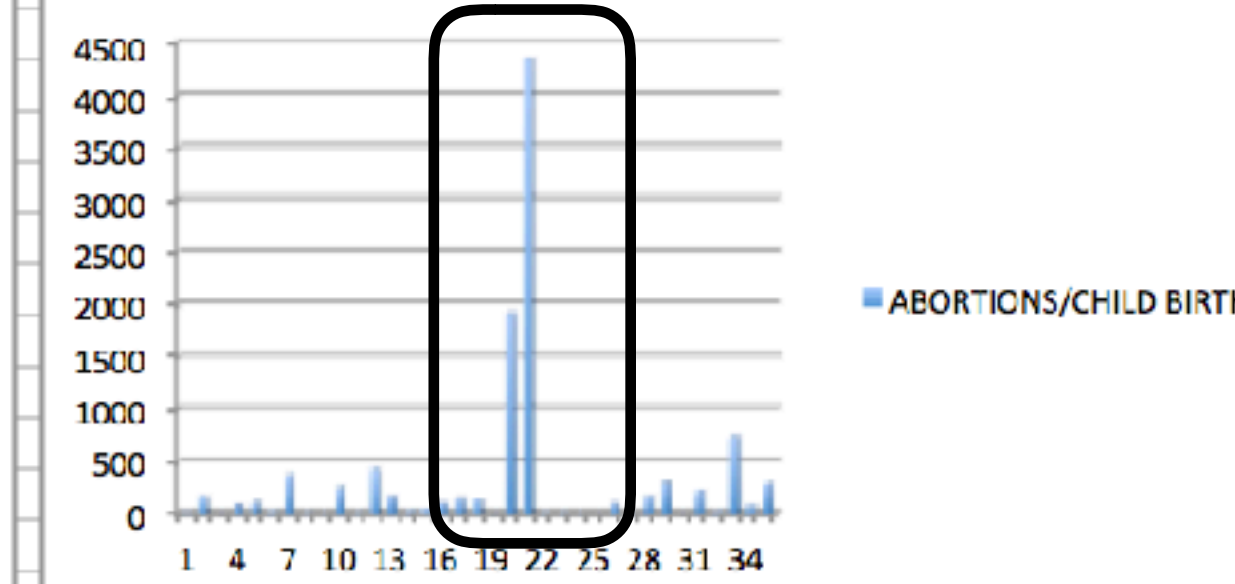
EPILEPTIC FITS/GIDDINESS



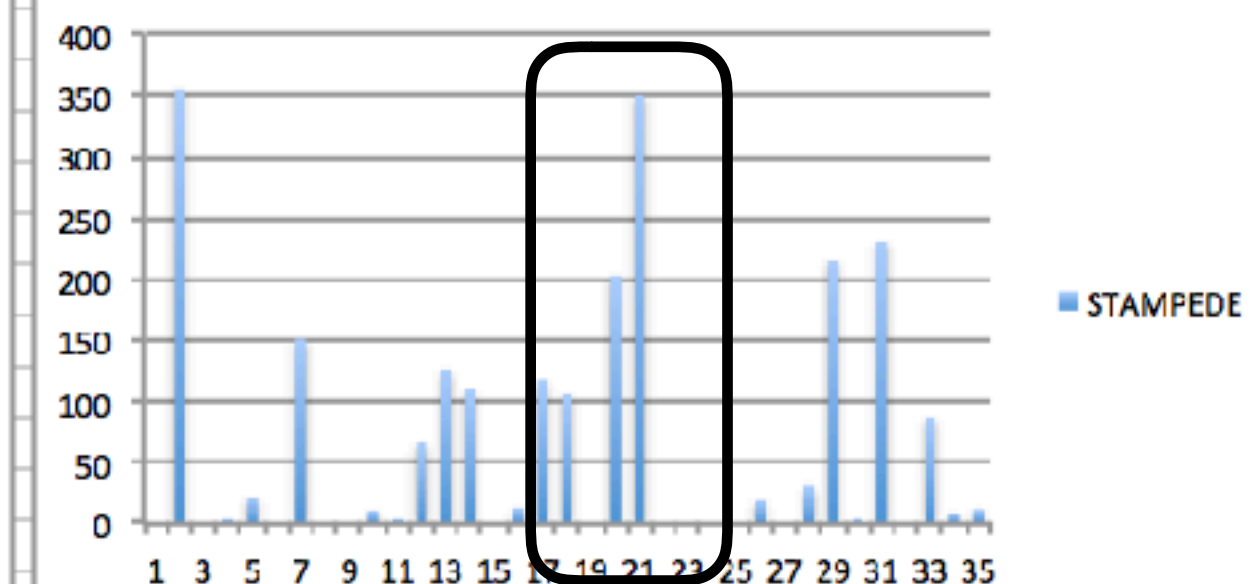
SUFFOCATION

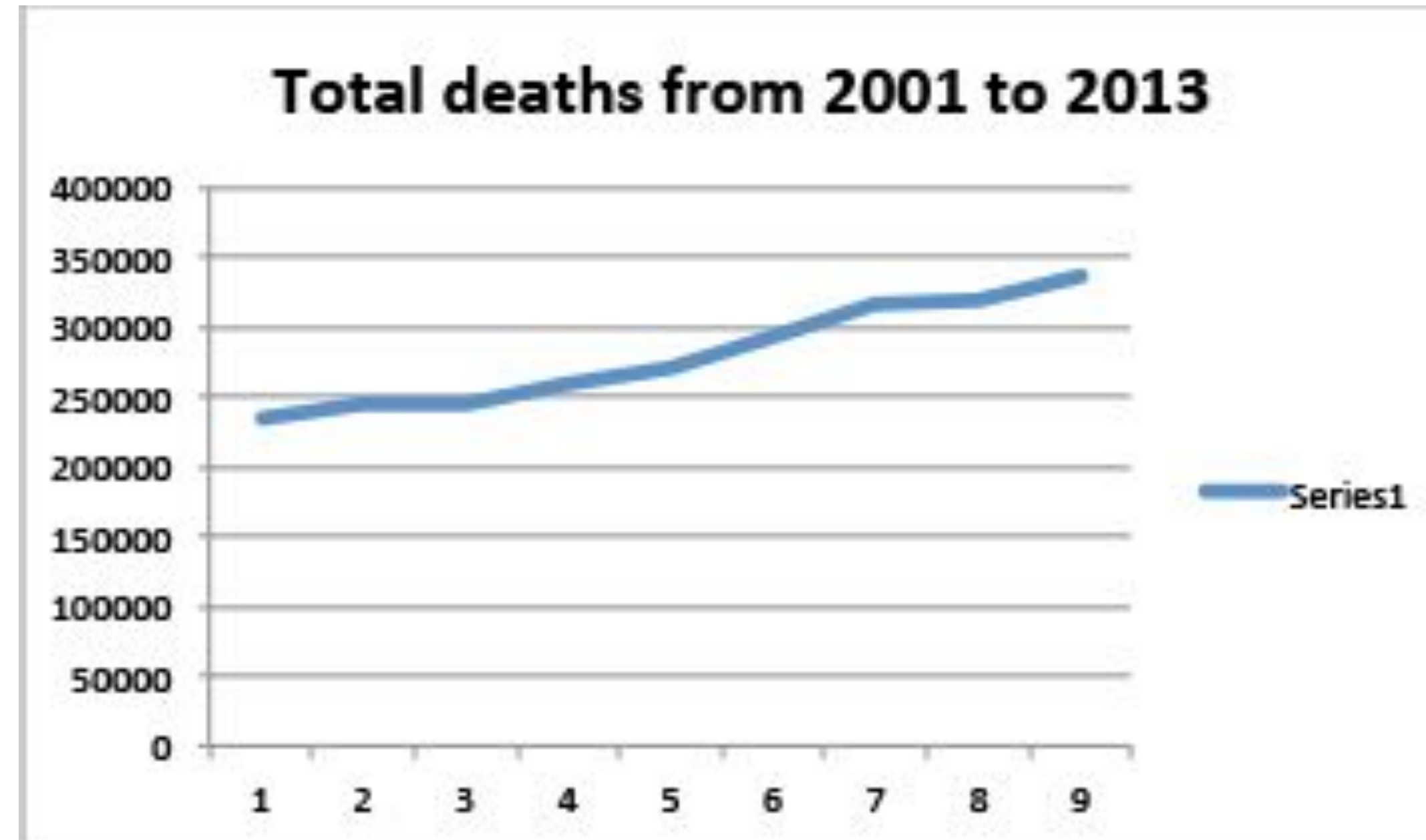
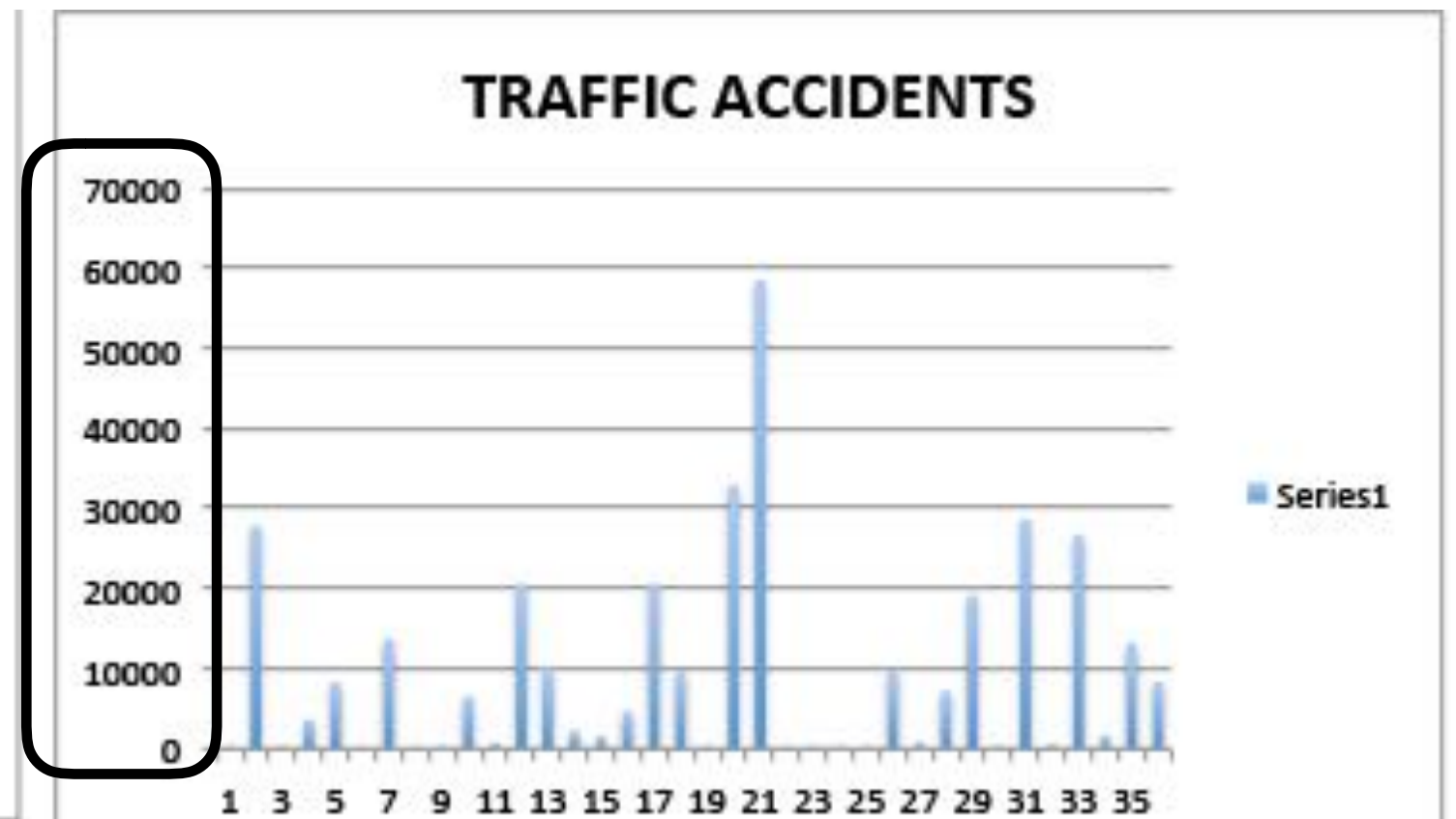
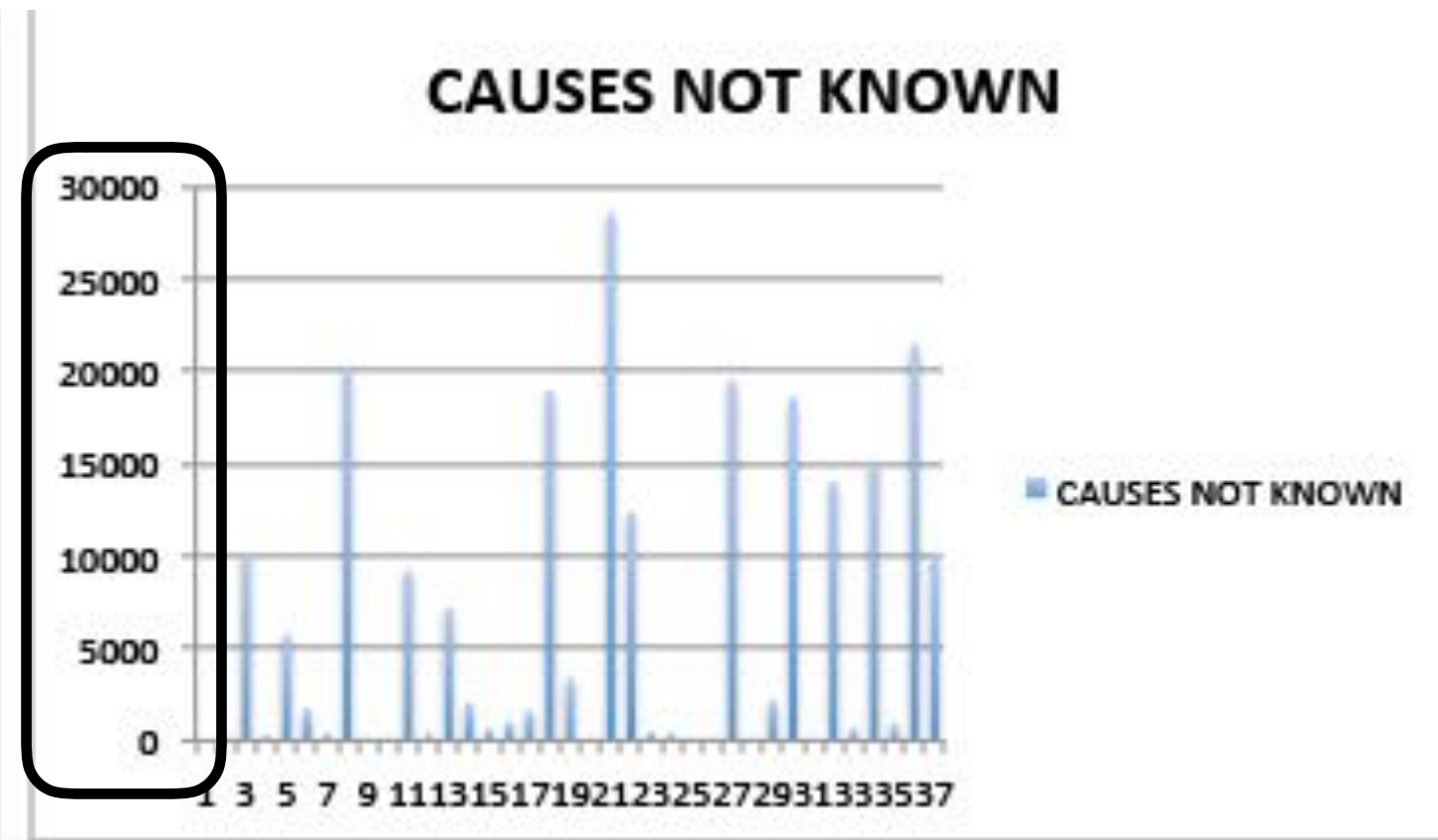
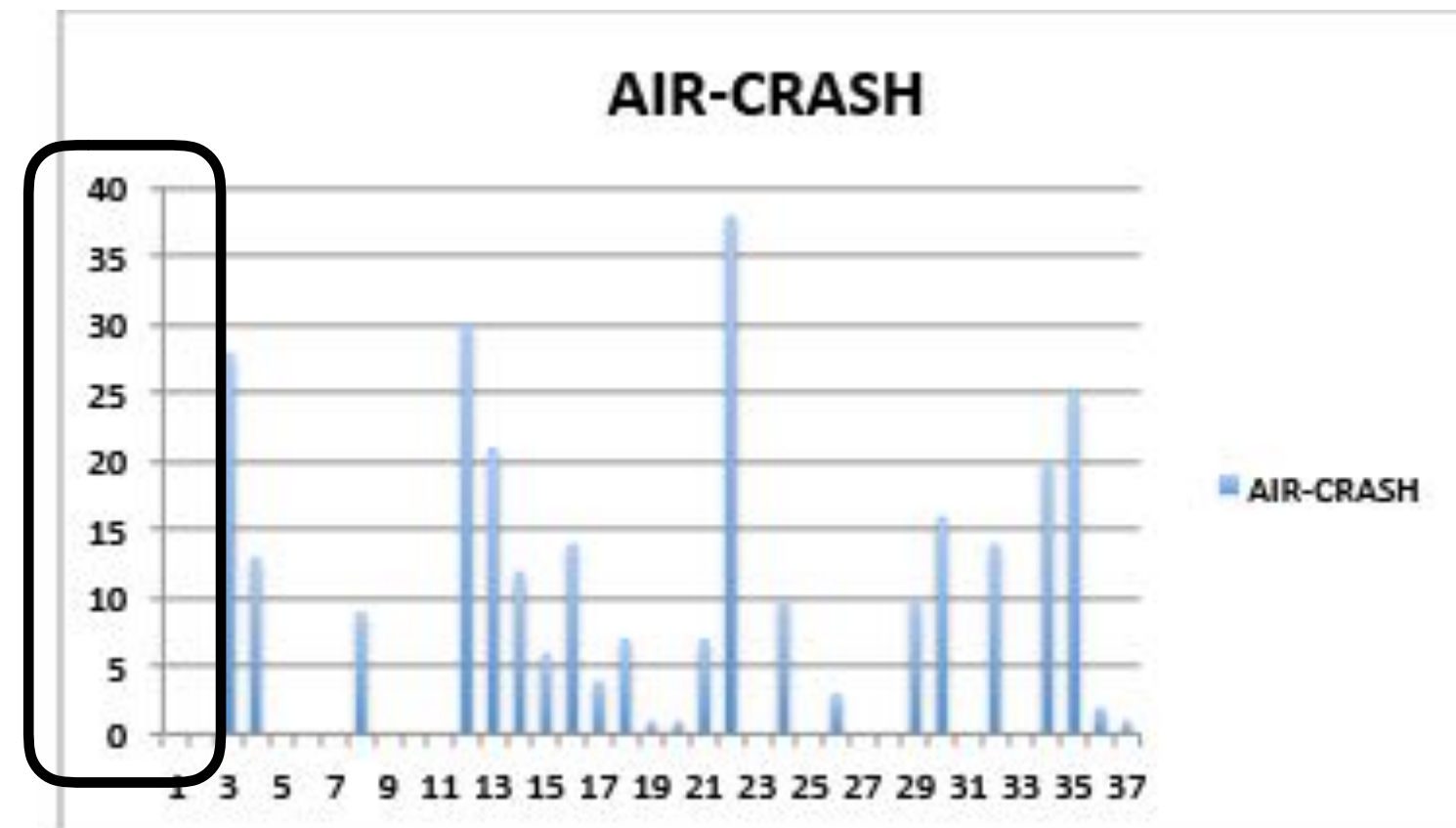


ABORTIONS/CHILD BIRTH



STAMPEDE

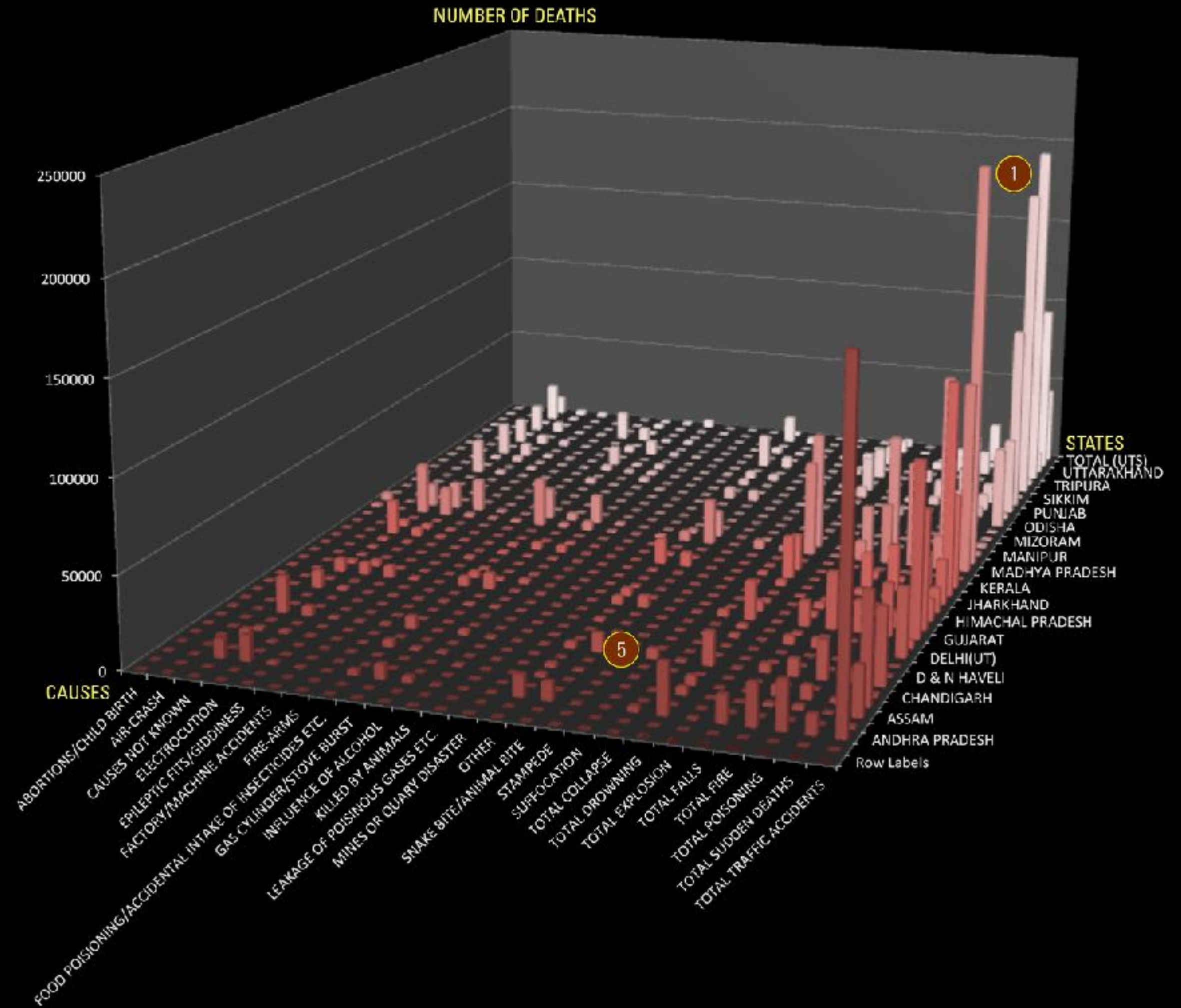
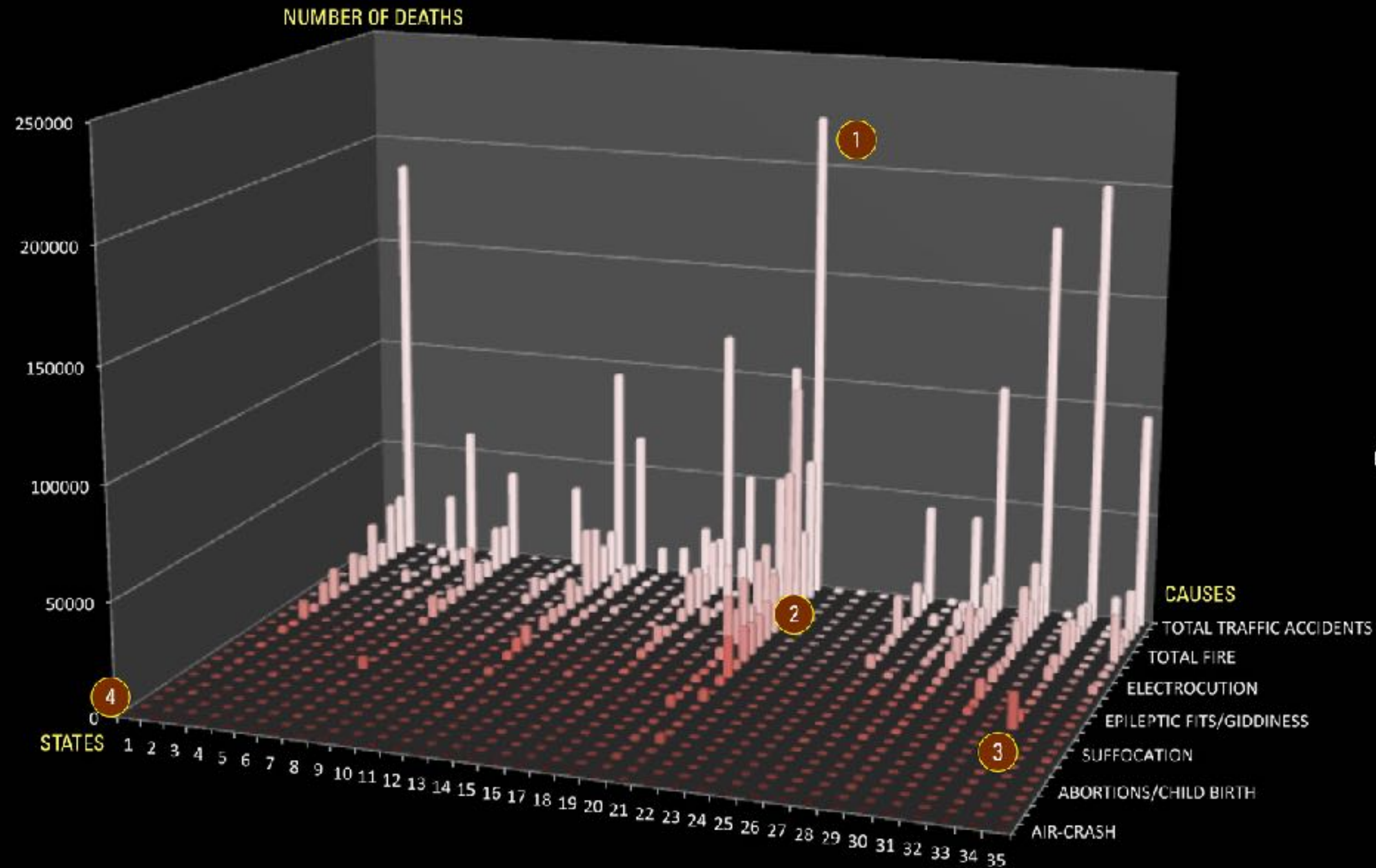




Insights

- Traffic accidents cause **5 times** deaths than drowning does
- Only **291** people have died in Air crash
- Maharashtra comes in **top three** in almost all the cases
- UP has a epic proportion of deaths due to firearms, almost ten times more than J&K, the second state in the line
- More than 5,000 people have died due to suffocation in Chattisgarh

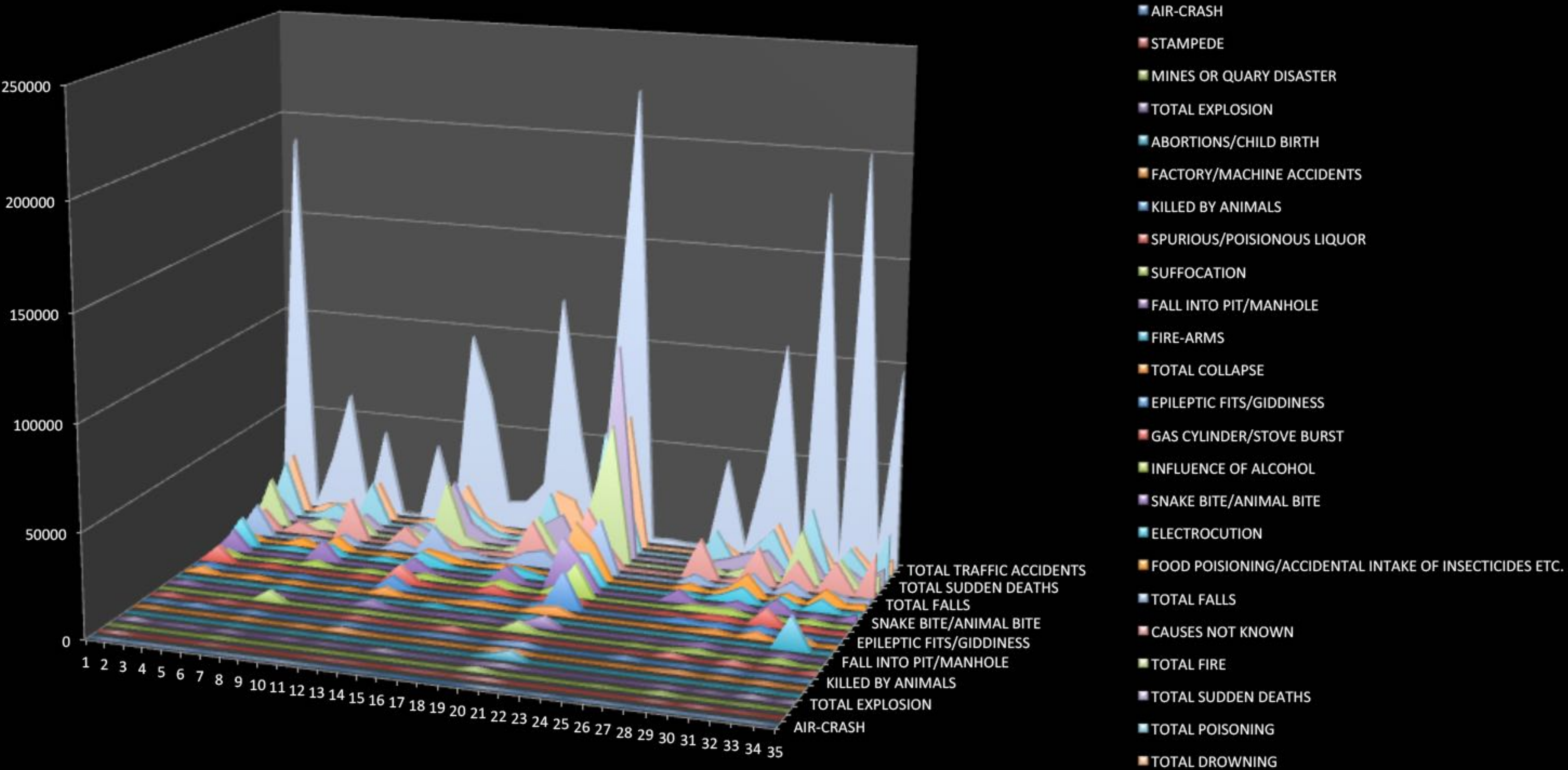
CAUSES OF UNNATURAL DEATHS IN DIFFERENT STATES OF INDIA FROM 2001 TO 2013



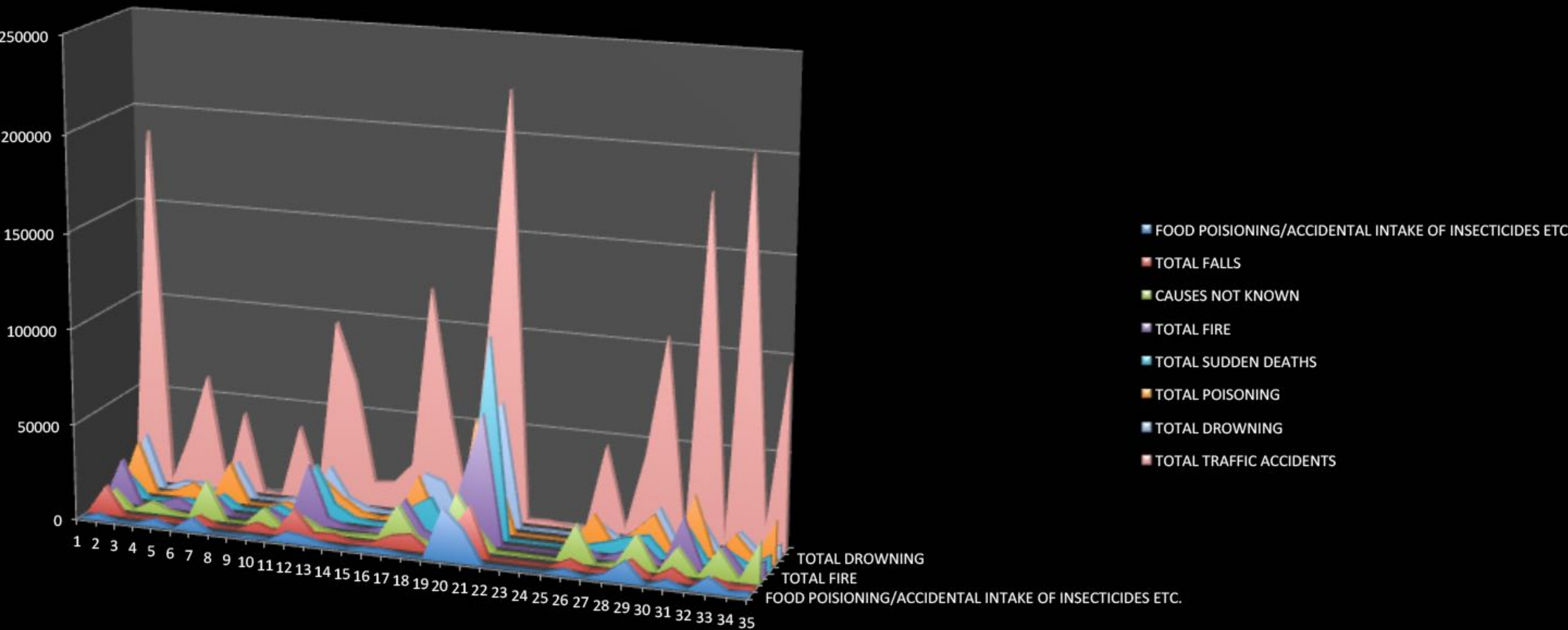
INSIGHTS

1. TRAFFIC ACCIDENT IS THE CAUSE OF THE HIGHEST NUMBER OF UNNATURAL DEATHS 10 TIMES MORE THAN DROWNING, THE SECOND CAUSE.
2. MAHARASHTRA, THE HIGHEST STATE OF RECORDED UNNATURAL DEATHS,, HAS TWICE THE NUMBER OF DEATH THAN AP, THE SECND HIGHEST
3. UP HAS 10 TIMES MORE DEATHS DUE TO FIRE ARMS THAN J&K
4. AIR CRASH LEADS TO LEAST NUMBER OF UNNATURAL DEATHS.
5. 5000 PEOPLE HAVE DIED OF SUFFOCATION IN CHATTISGARH IN LAST 13 YEARS.

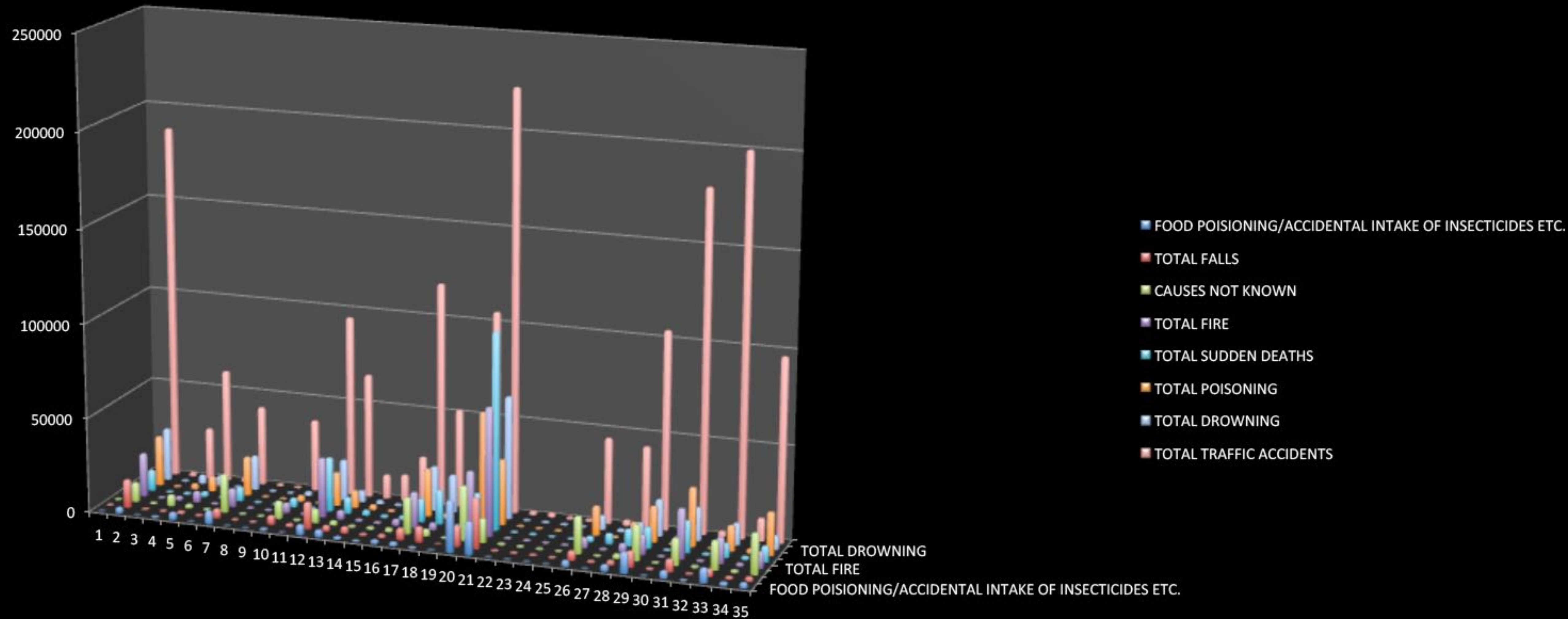
Causes of Unnatural Deaths in India, 2001-2013

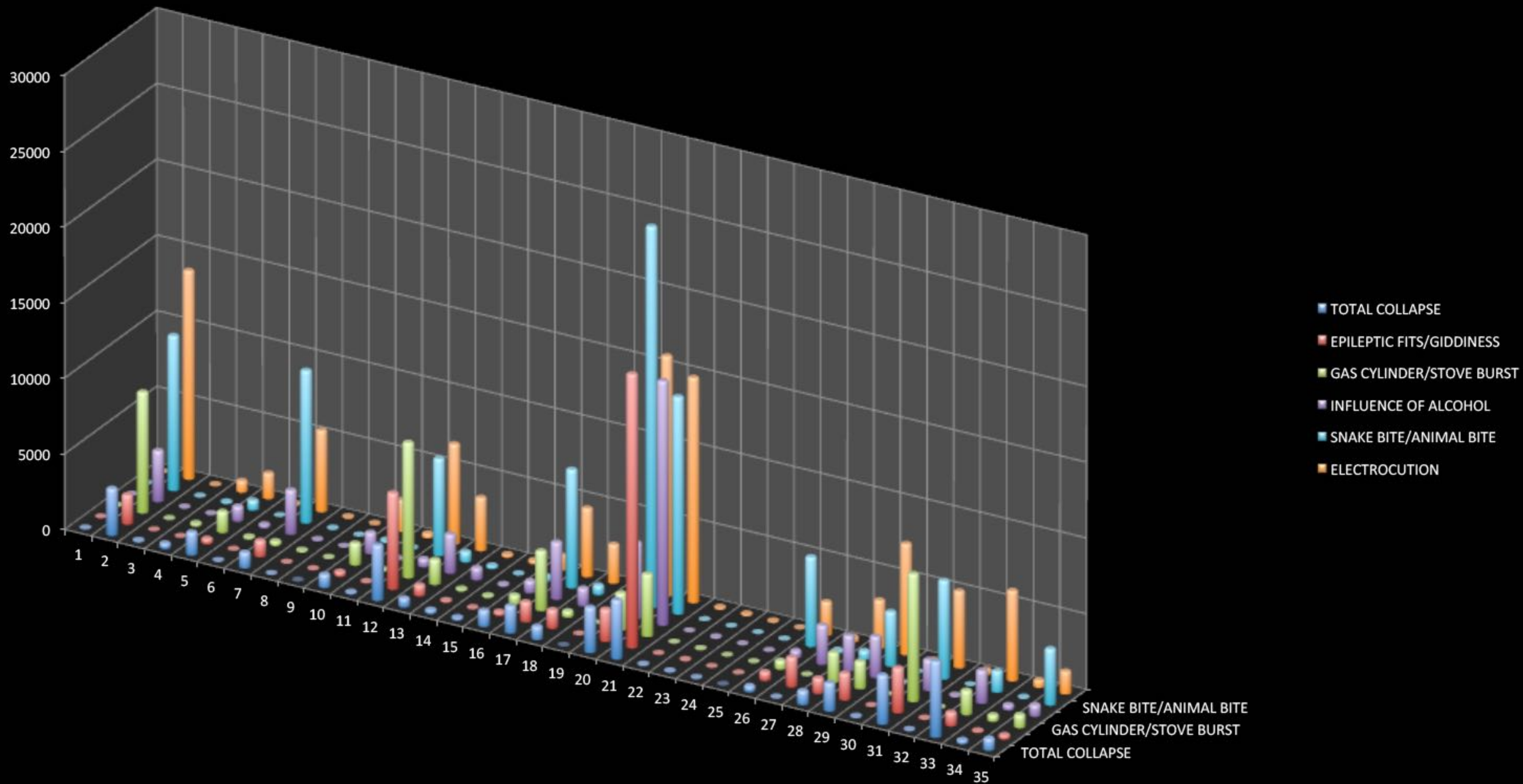


Major Causes of Unnatural Deaths

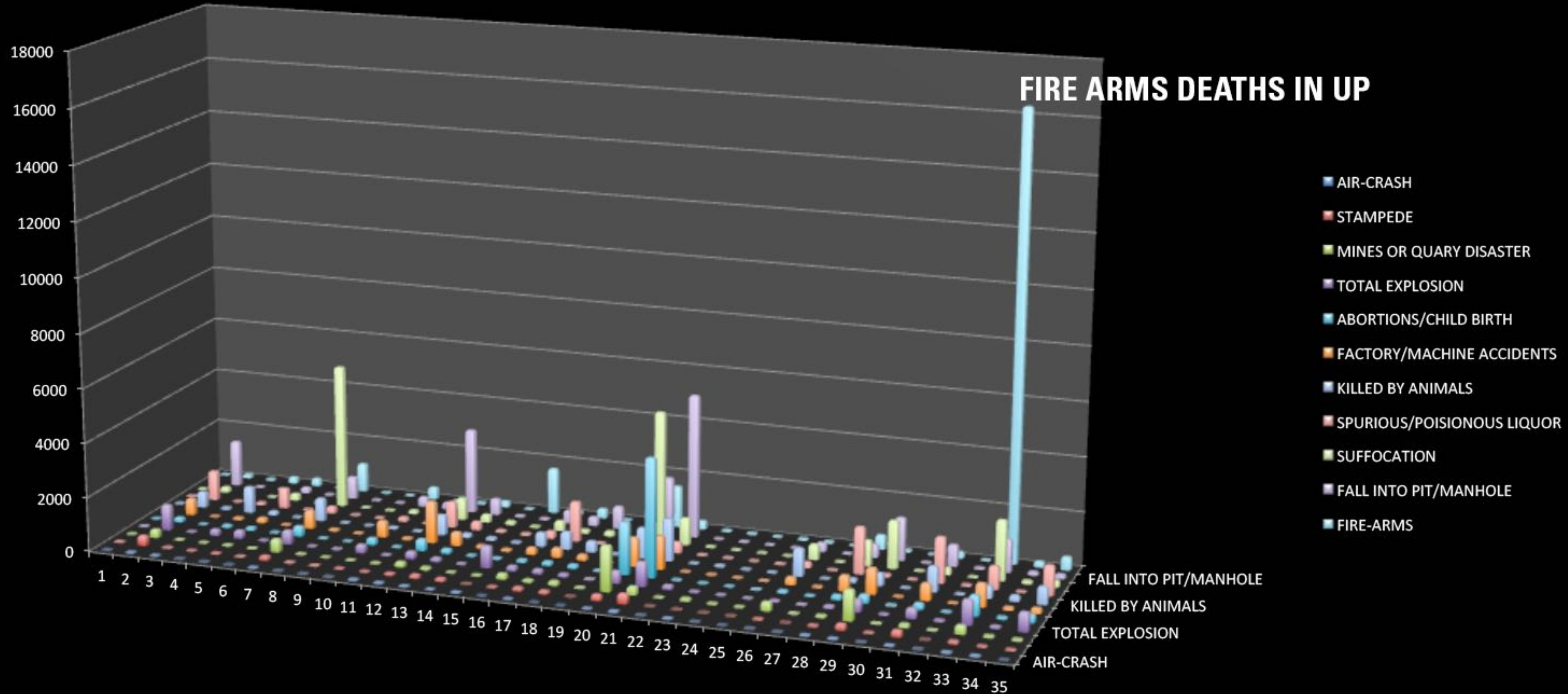


Major Causes of Unnatural Deaths



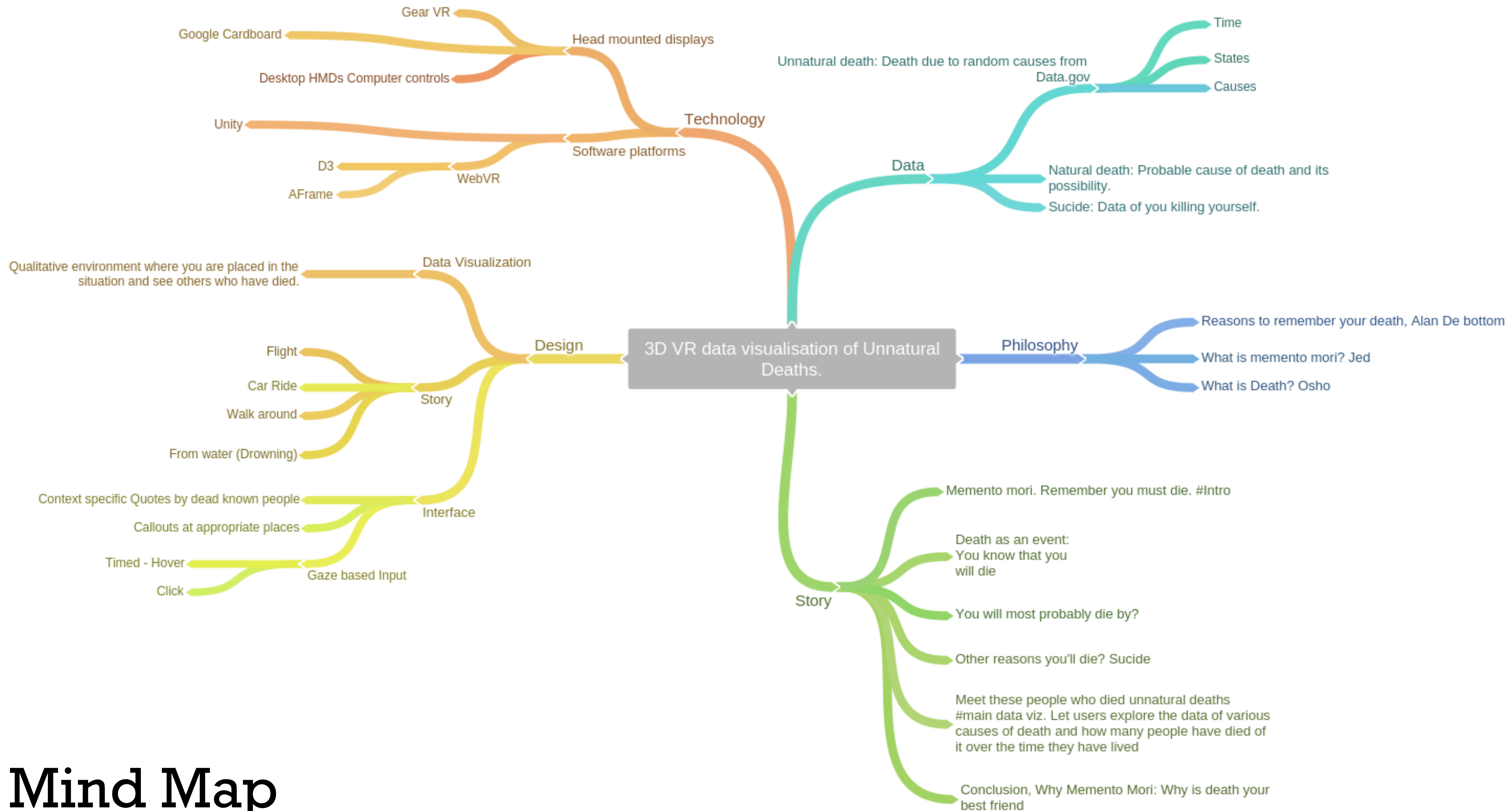


Minor Causes of Unnatural Deaths



Mind Map

Mind Map



“Rehearse death. To say this is to tell a person to rehearse his freedom. A person who has learned how to die has unlearned how to be a slave.”

- *Lucius Annaeus Seneca*

Death

- Fear of death
- Going to ghat to see pyres and know
- Death as event that happens to everyone vs existential certainty
- Death as reality that cannot be escaped
- Shiva Meditating (Vigyan Bhai-rava)

Design Idea

- In the city of the dead
- Series of Visualisations
- Series of Situations
- Loop - Memento Mori

Interaction

Hover over data points

Select range/chunk of

- State(s) } Look at bottom line
- Cause(s) }

- Relative size of you to maze, is imp

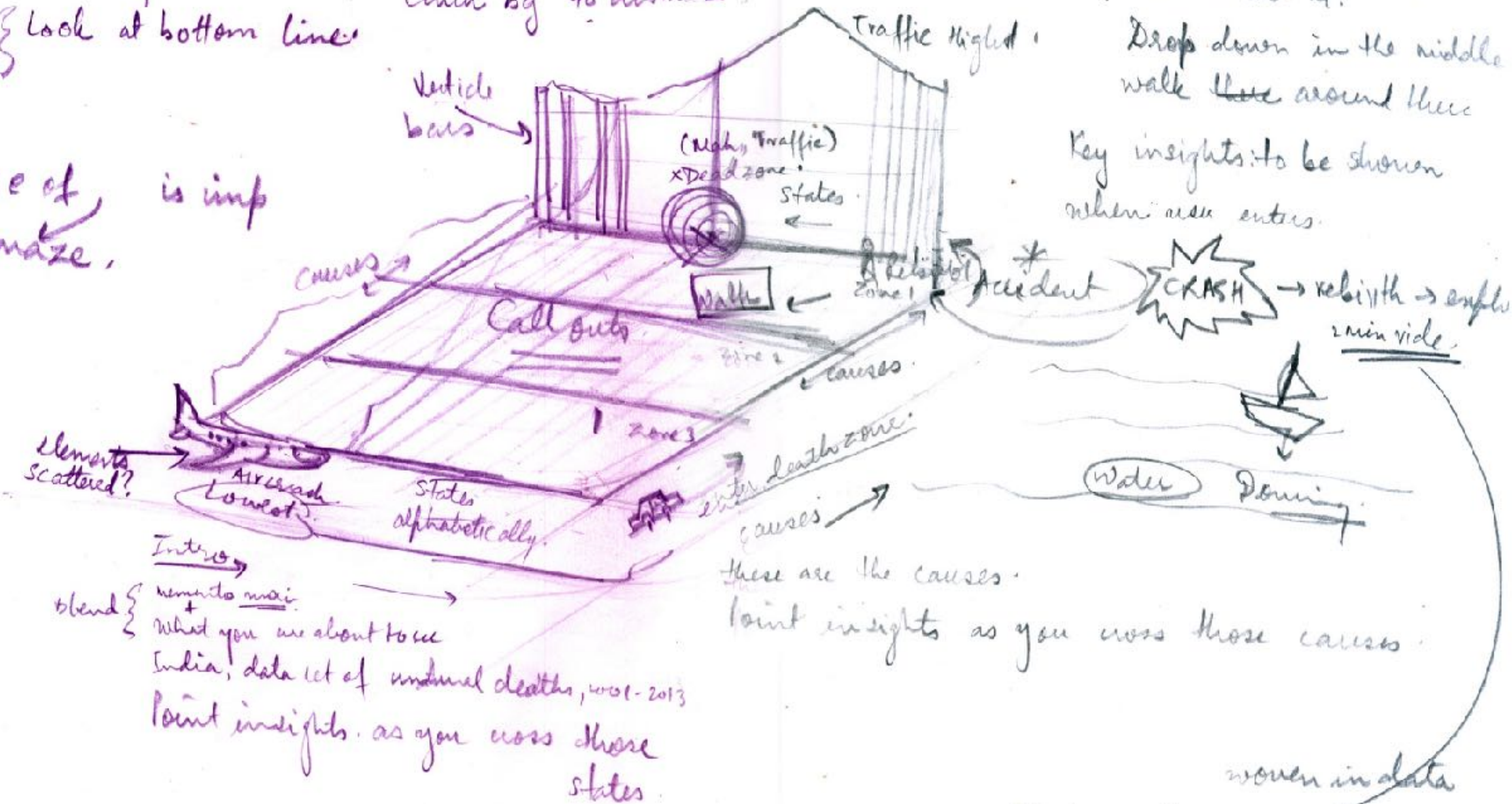
Maze based Interface

Basic buttons

and click to select houses.

click bg to dismiss

Maze of the dead.



Can ride

Intro text

Legends

what this viz is doing,

how to read it.

Drop down in the middle

walk there around there

Key insights to be shown when user enters

To Tell the story

Explain dataset

Legends and layout

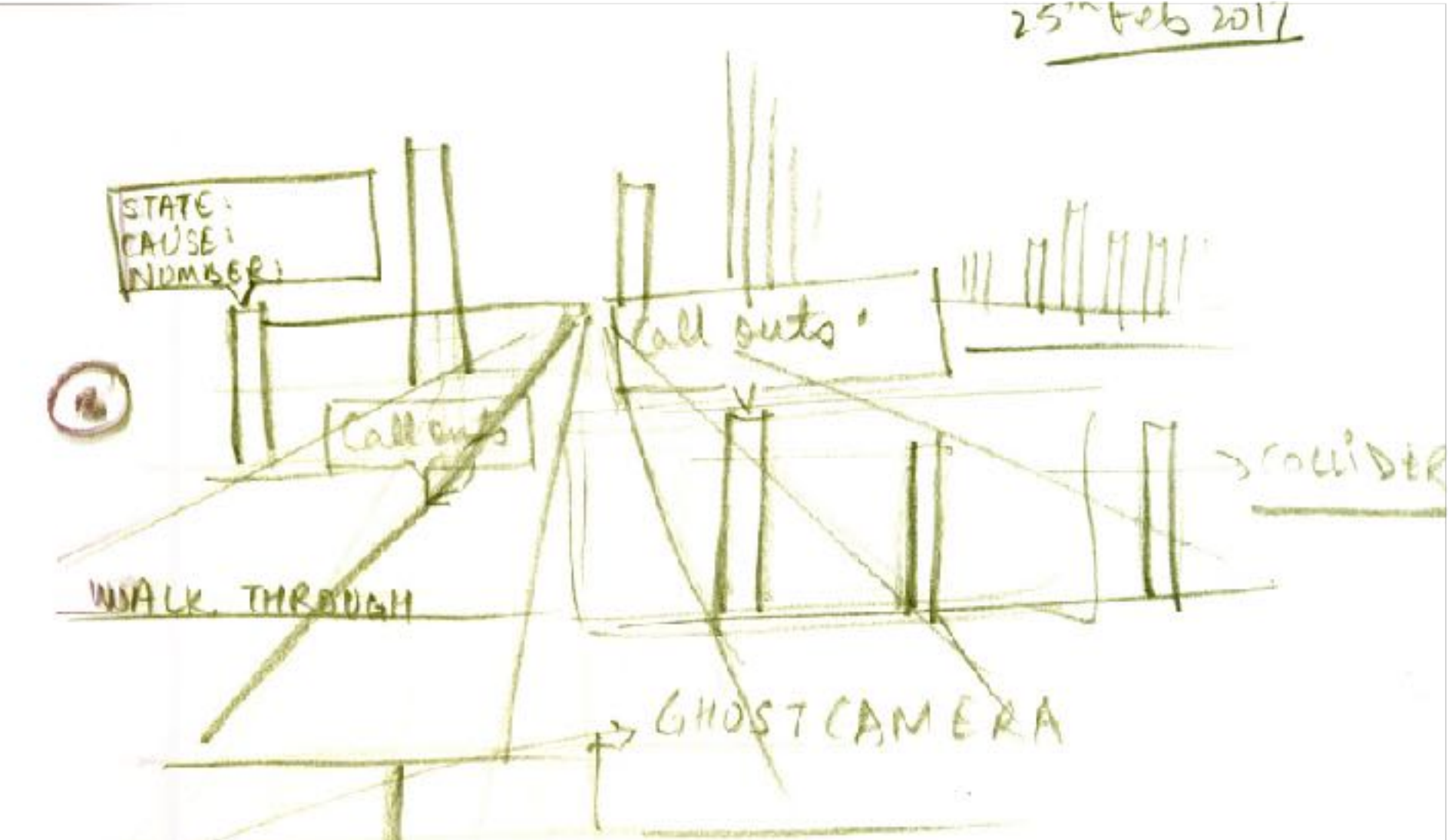
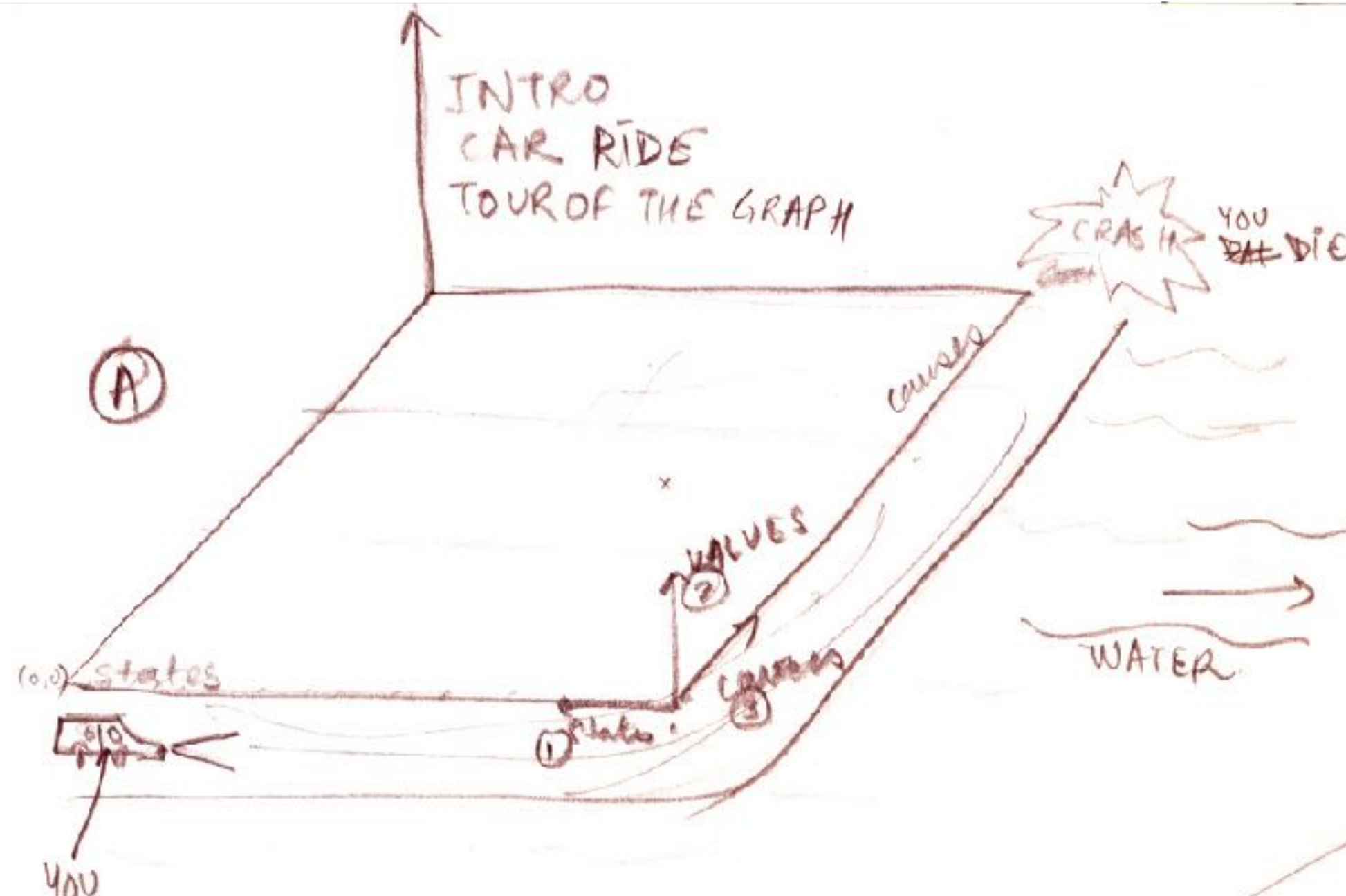
Insights

Die

Remember you must die

Data story of Unnatural deaths in India from 2001 to 2013

25th Feb 2017

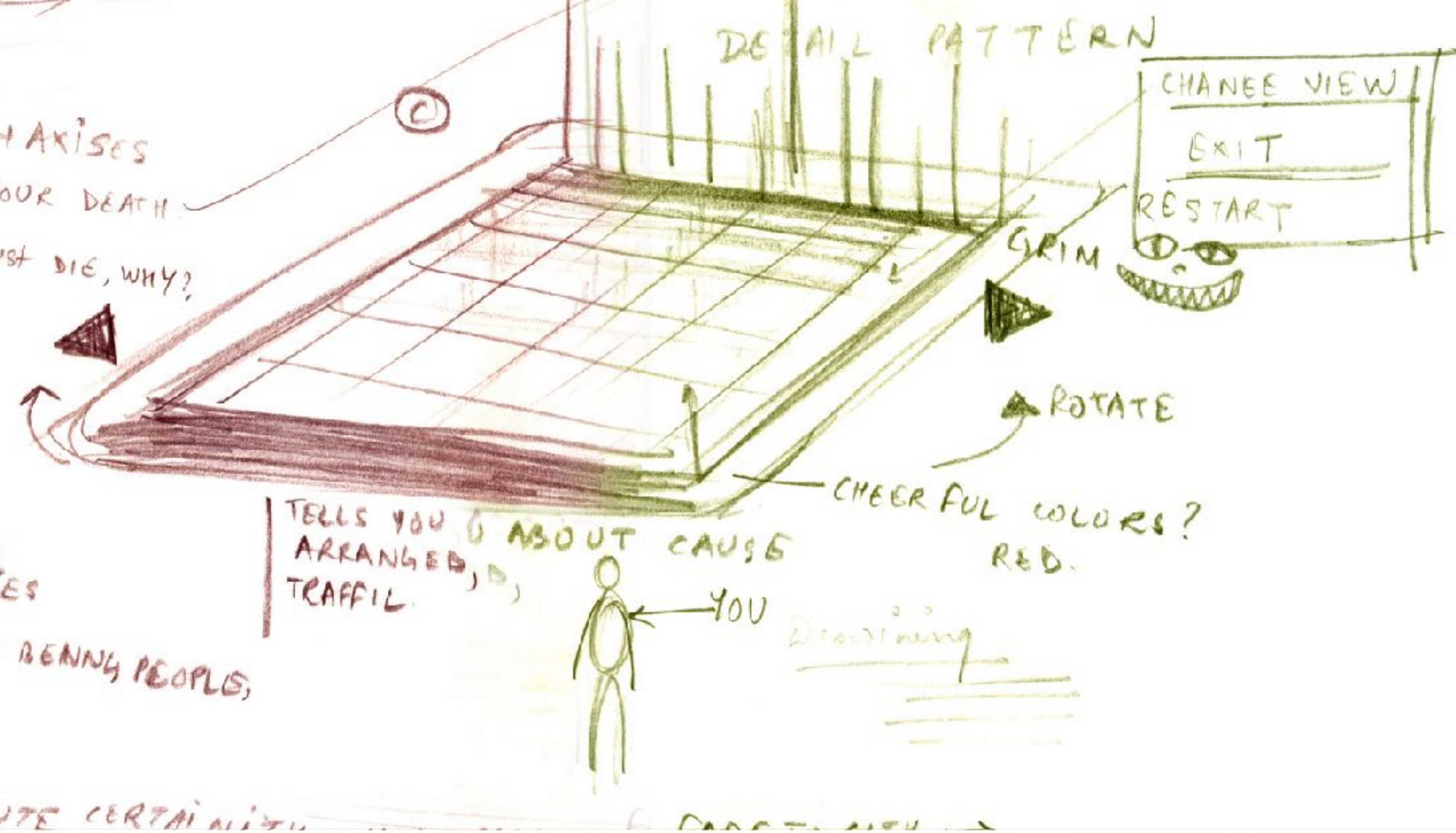


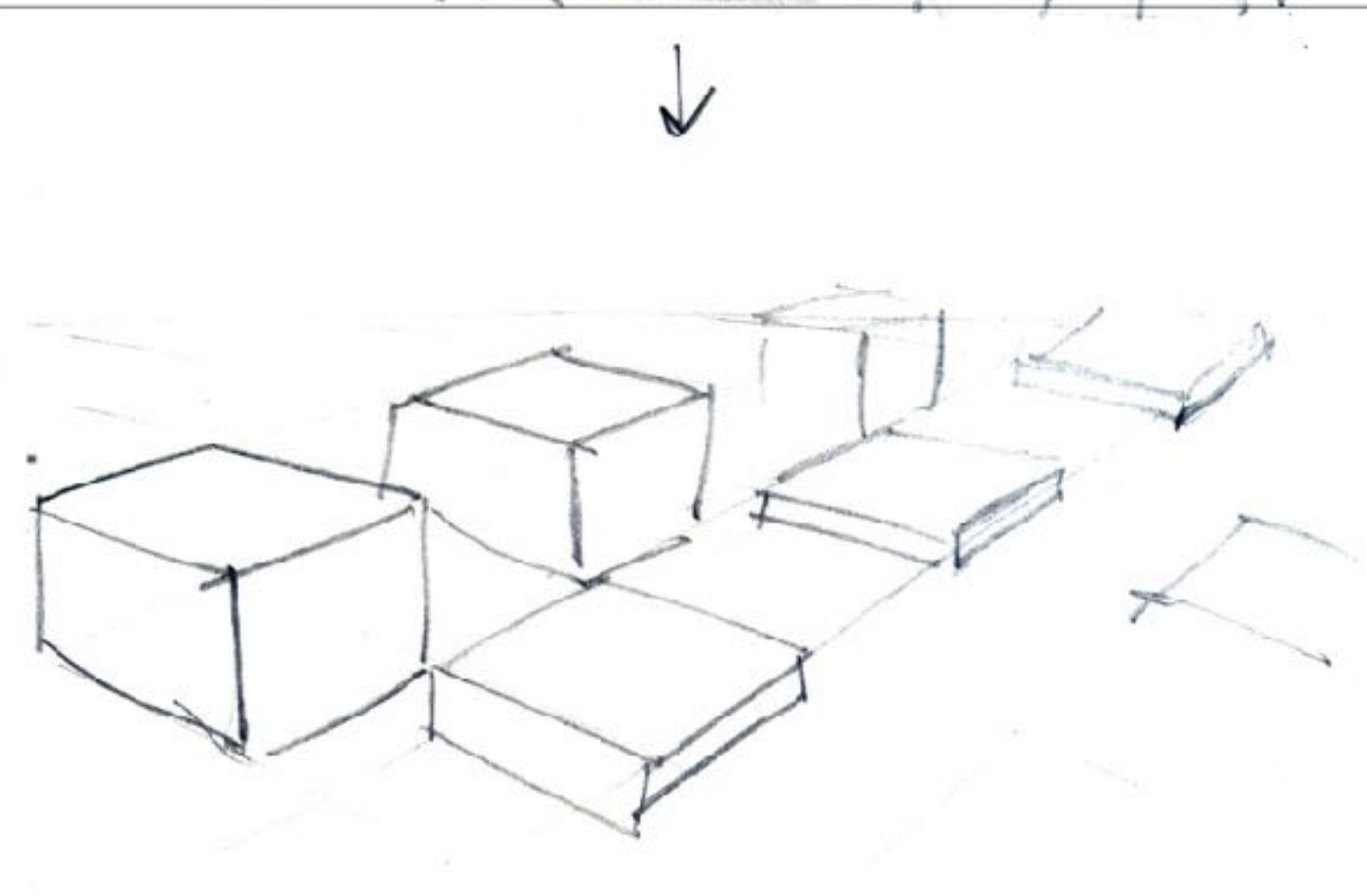
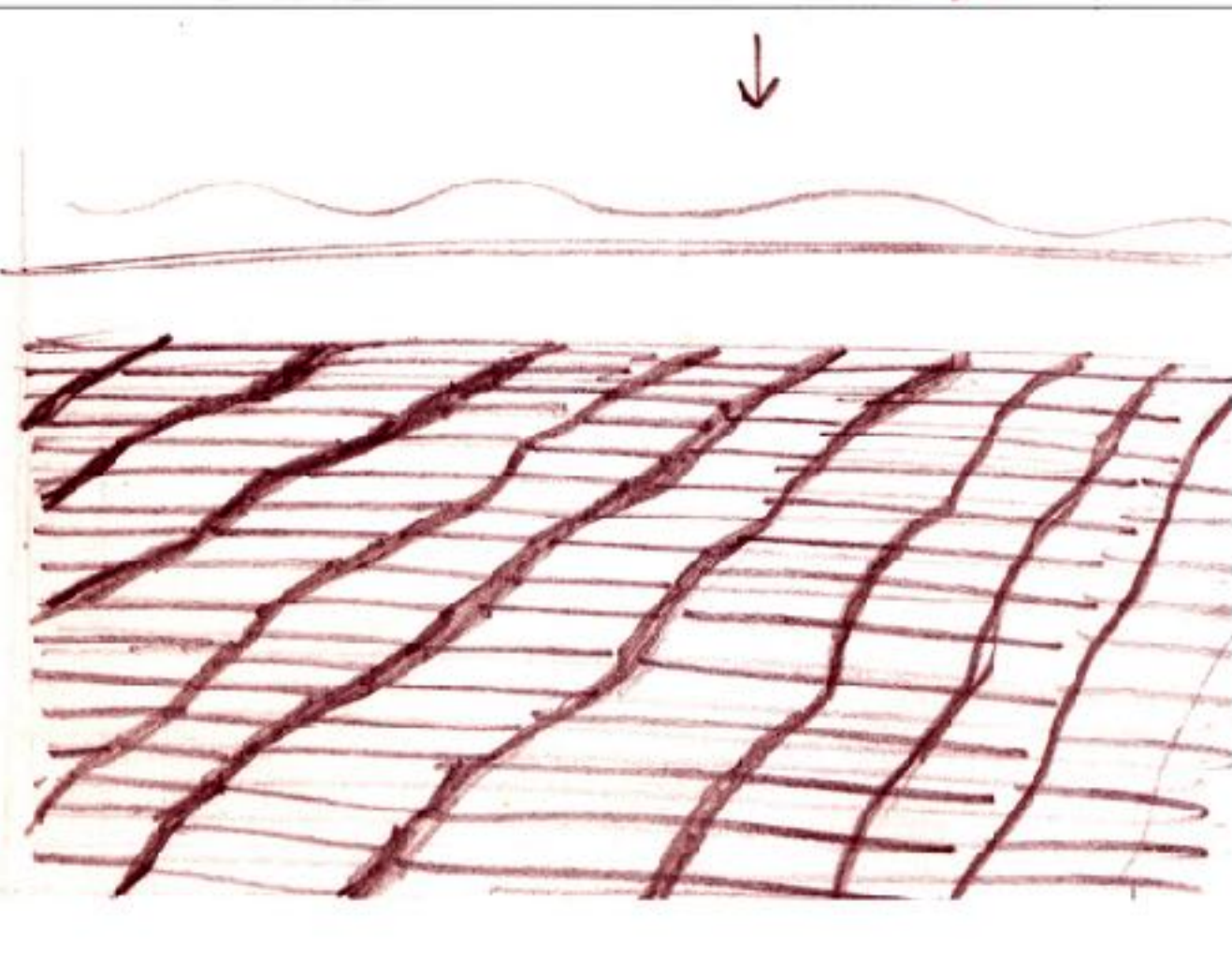
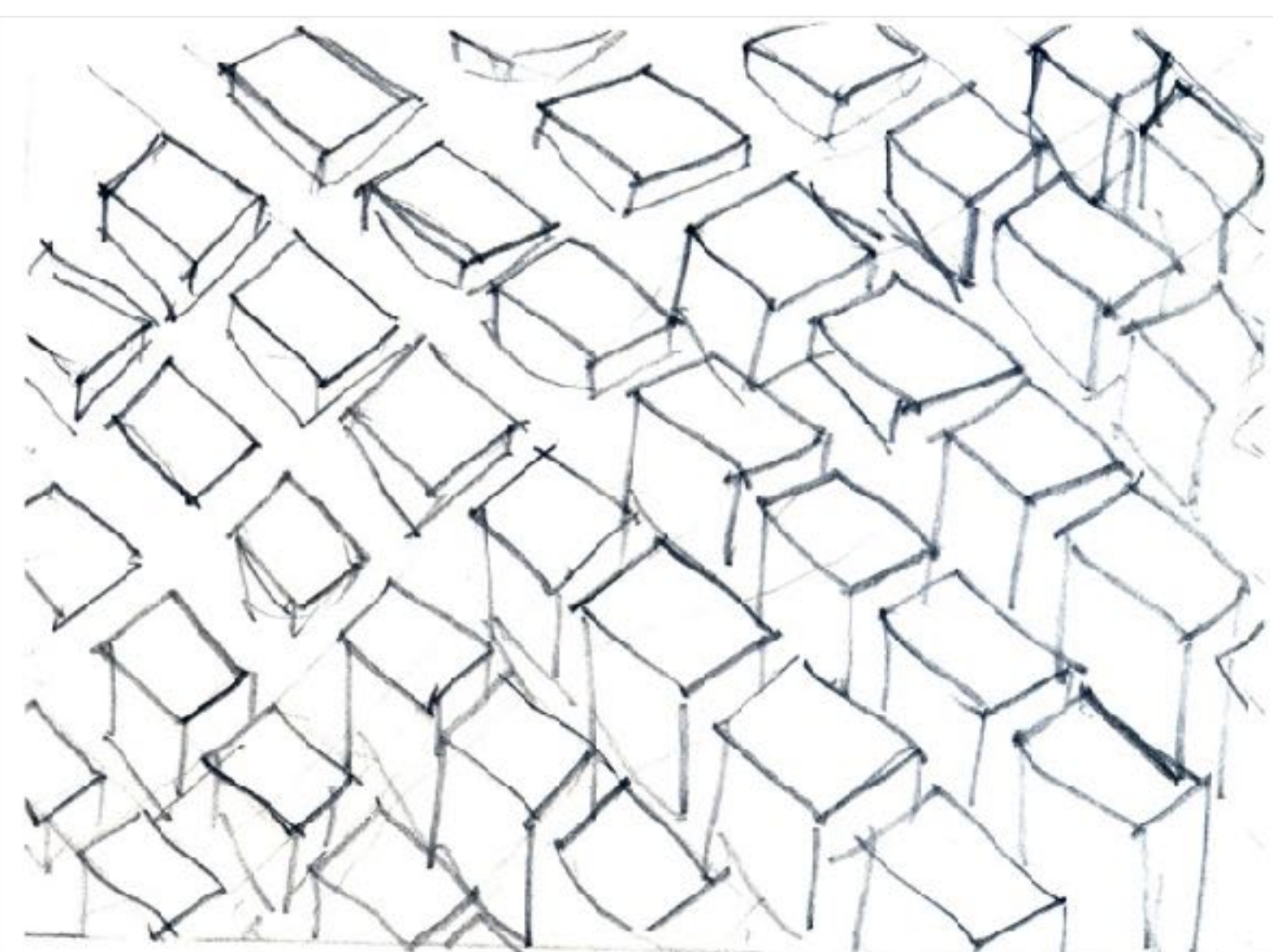
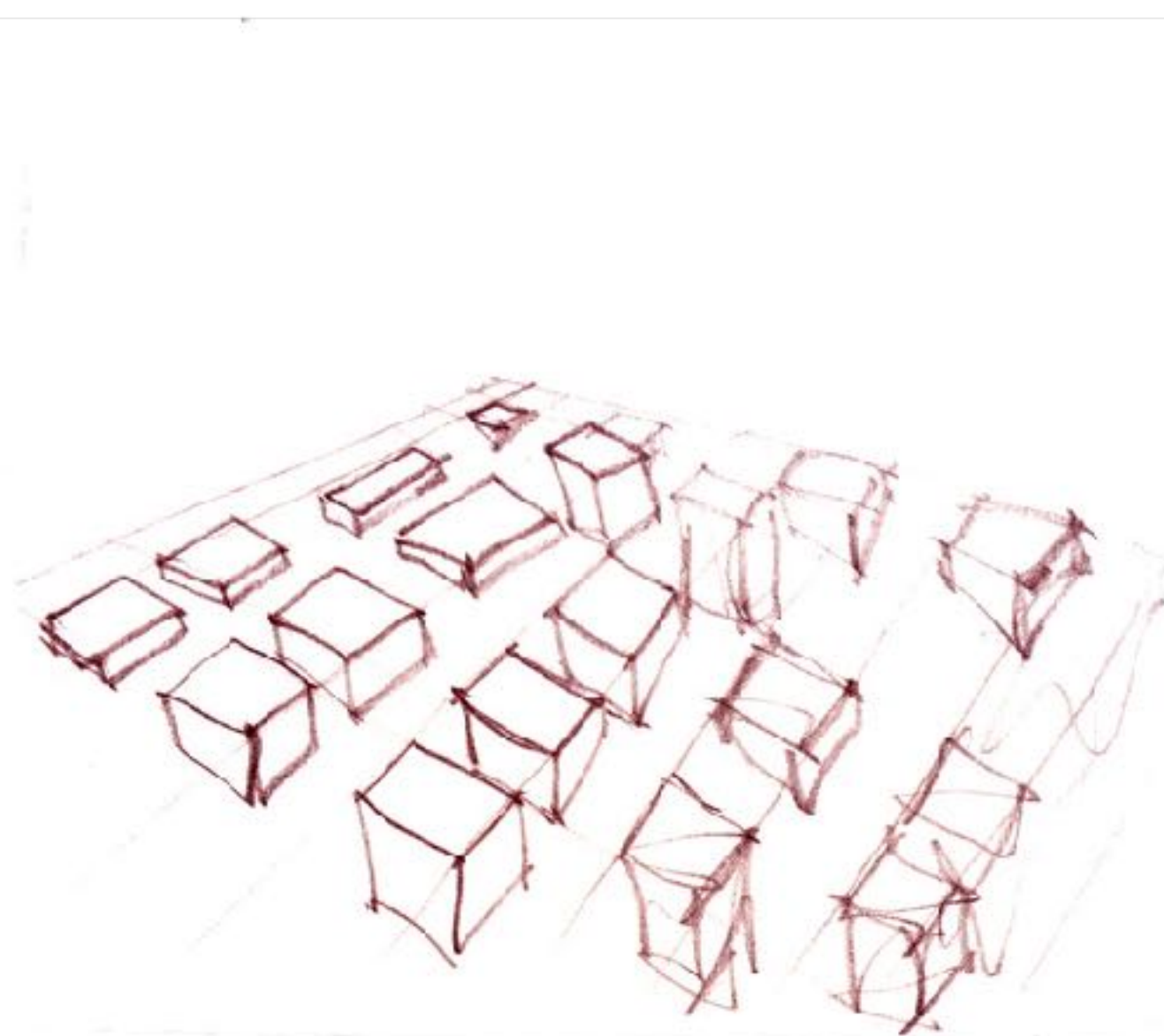
EXPLAIN THE DATA + AXISES
TELL THE STORY OF YOUR DEATH

MORAL: REMEMBER YOU MUST DIE, WHY?

SCENARIO (A)

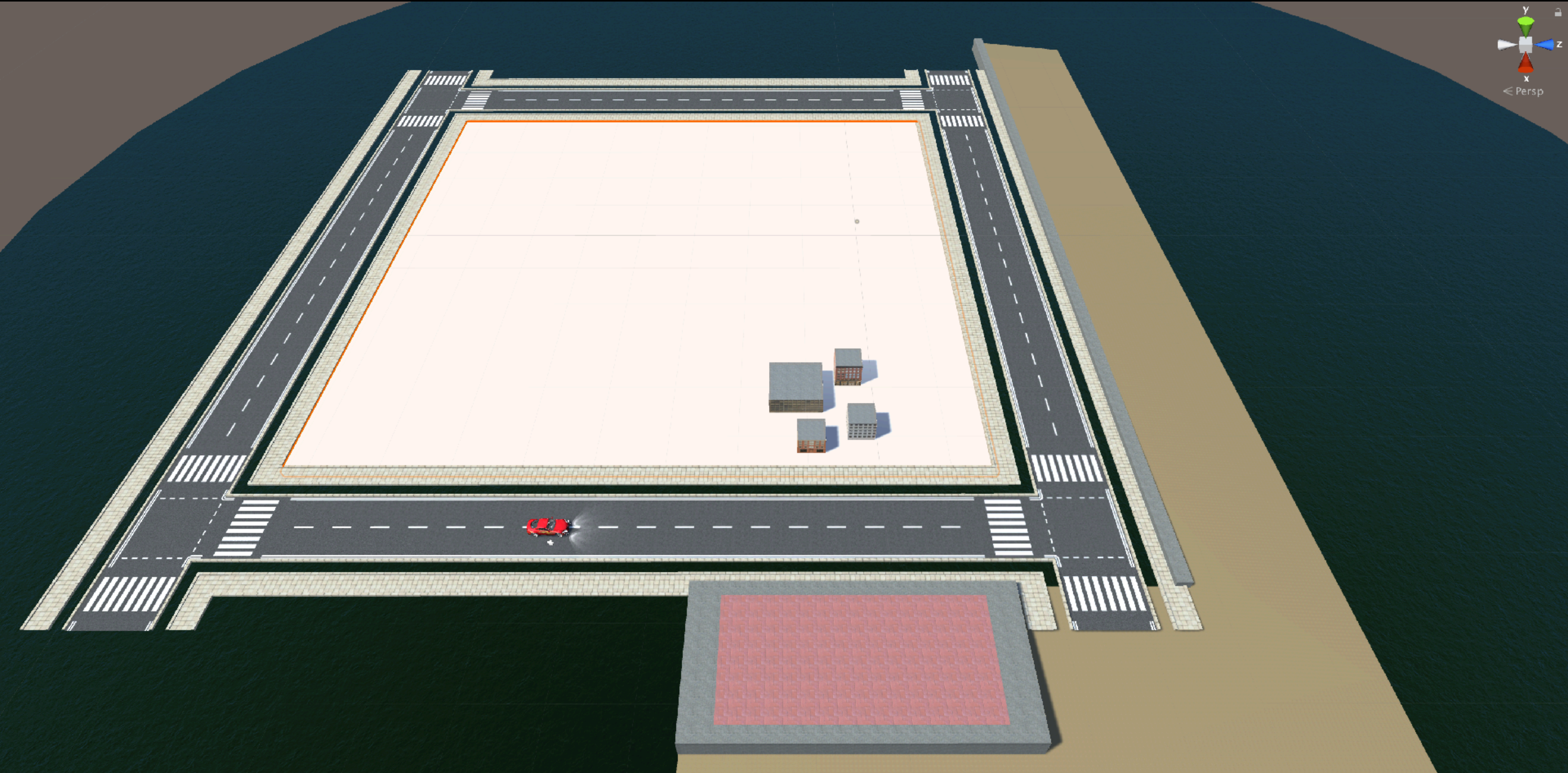
- YOU START JOURNEY IN INDIA
- DEATH STARTS TELLING YOU ABOUT ~~DEATH~~ ASAI
- PEOPLE WHO HAVE DIED BY UNNATURAL CAUSES
- TELLS YOU ABOUT STATES and ~~kind~~ LEGENDS, AXIES
- TELLS YOU ABOUT THESE BENNY PEOPLE, NOT JUST NOS.
- DEATH AS EVENT.
- ORHO
- YOUR DEATH IS ABSOLUTE CERTAINITY

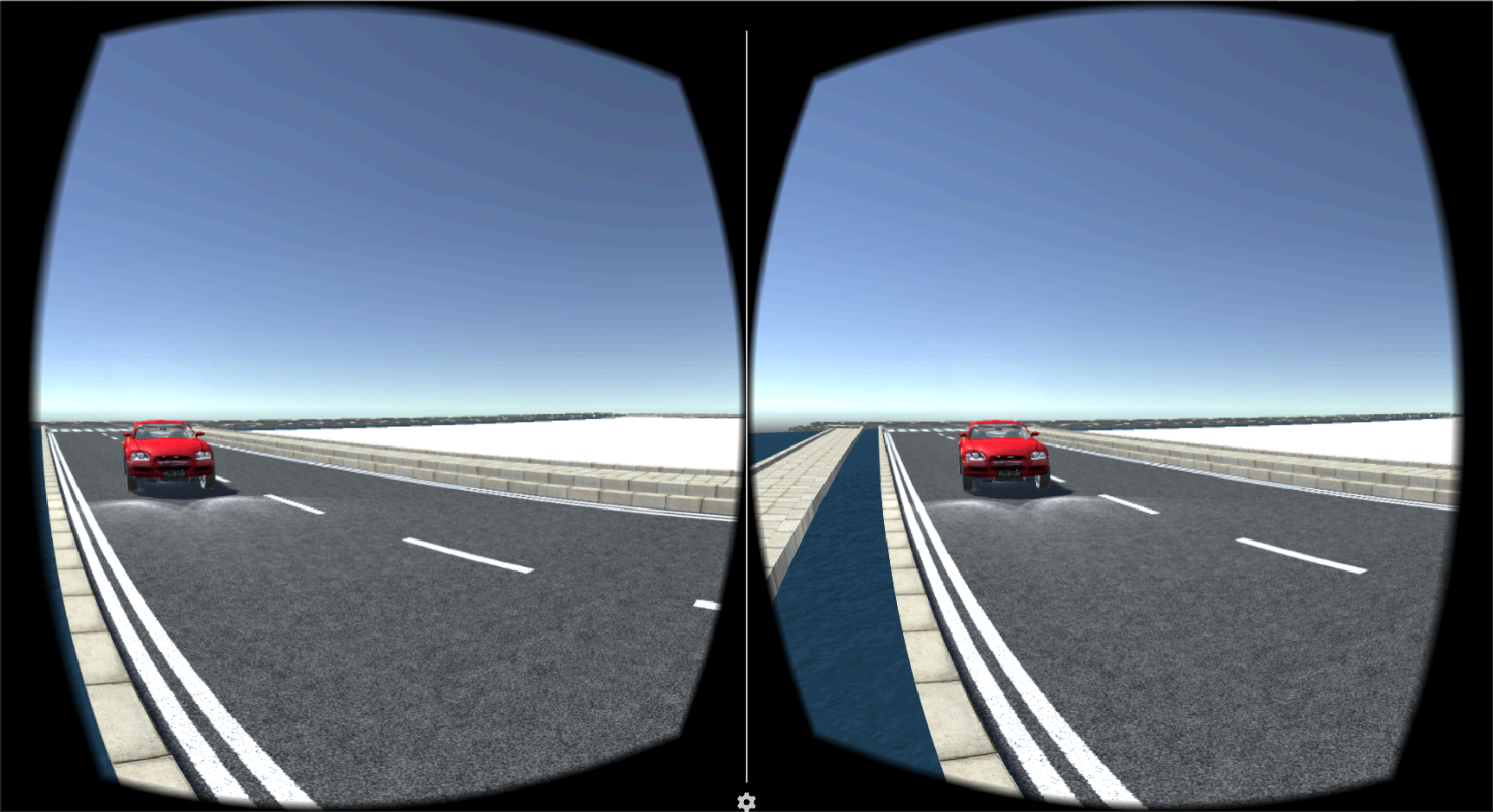


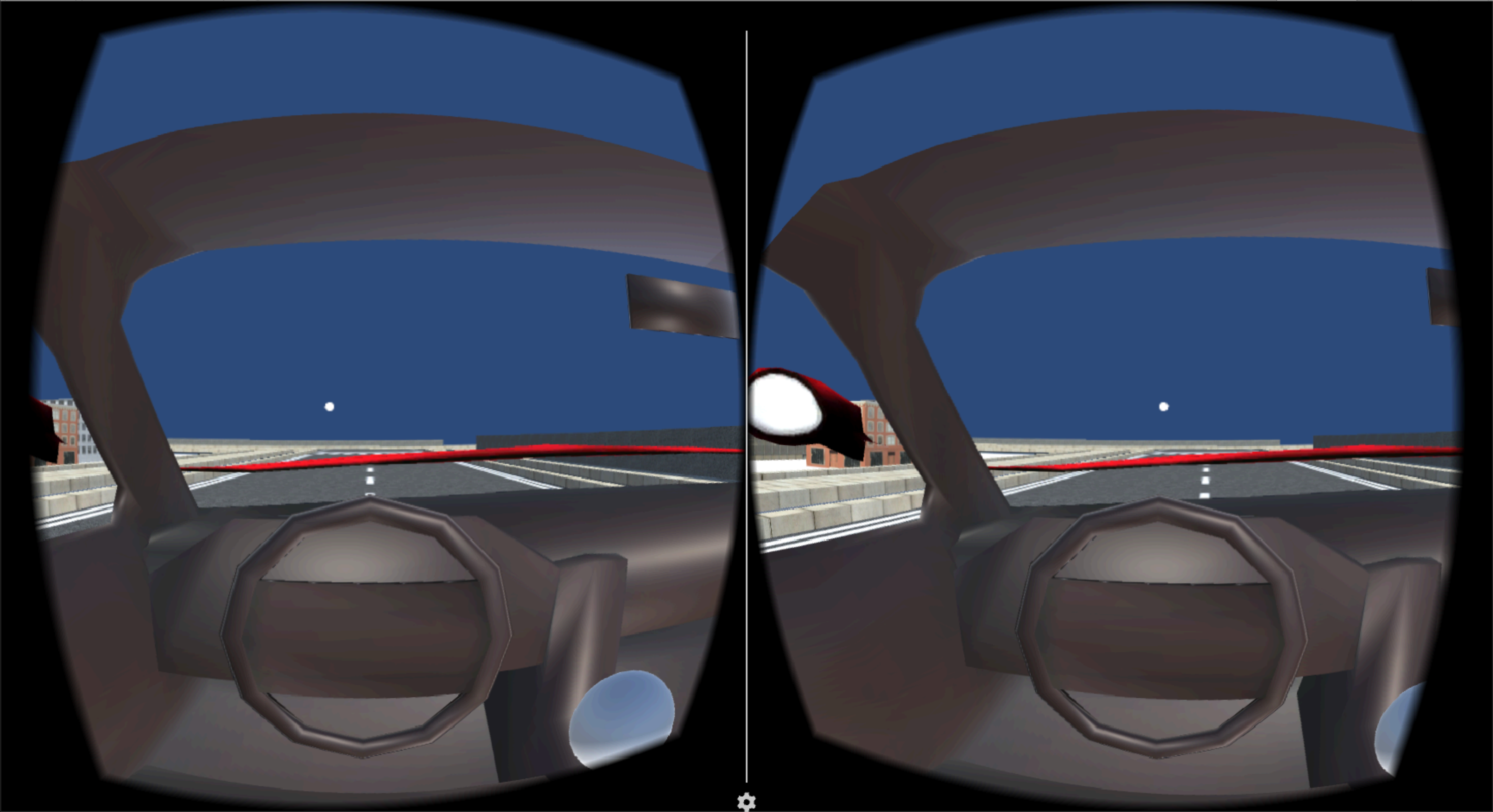


Prototype

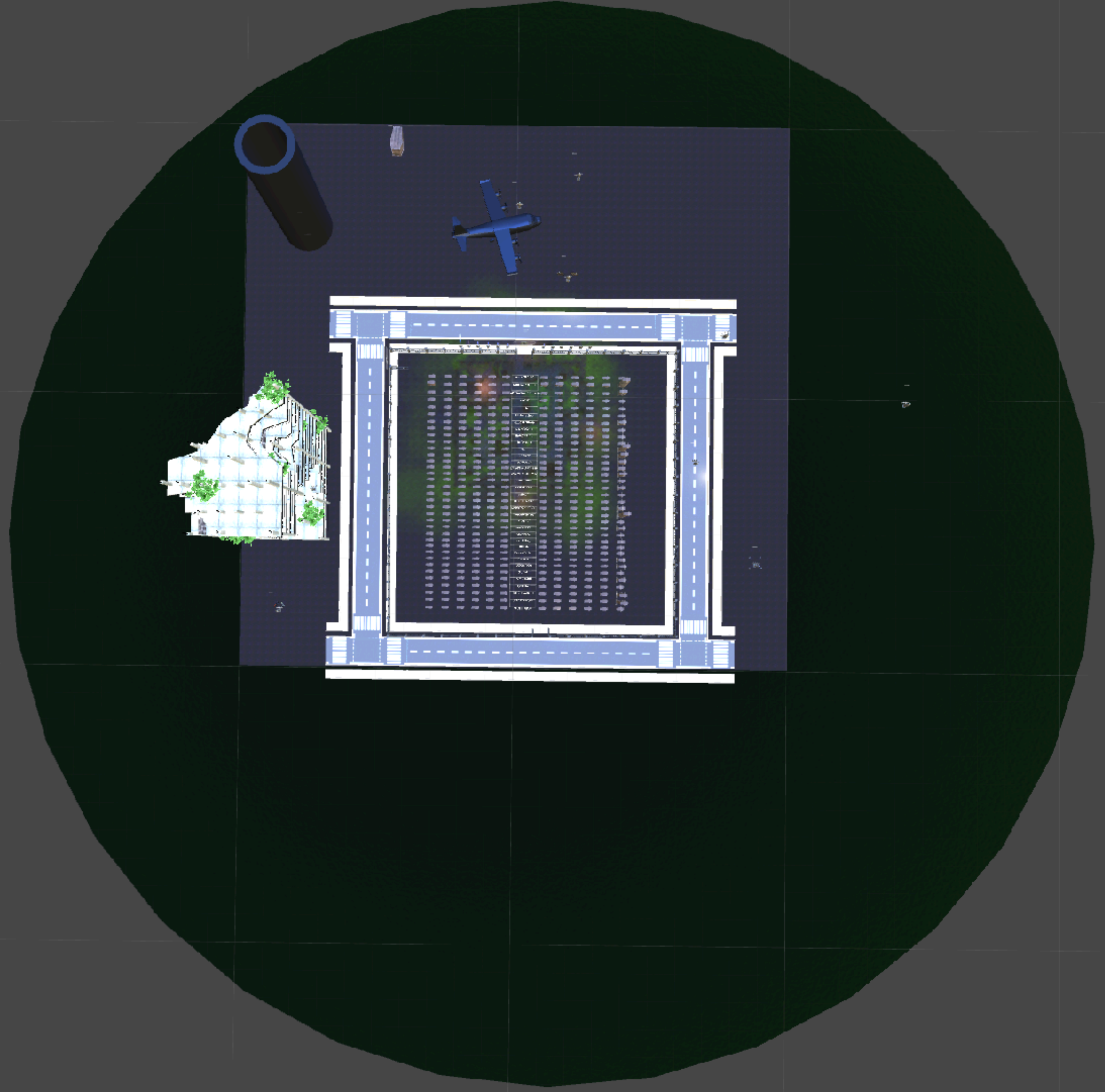
Stage 1







Stage 2



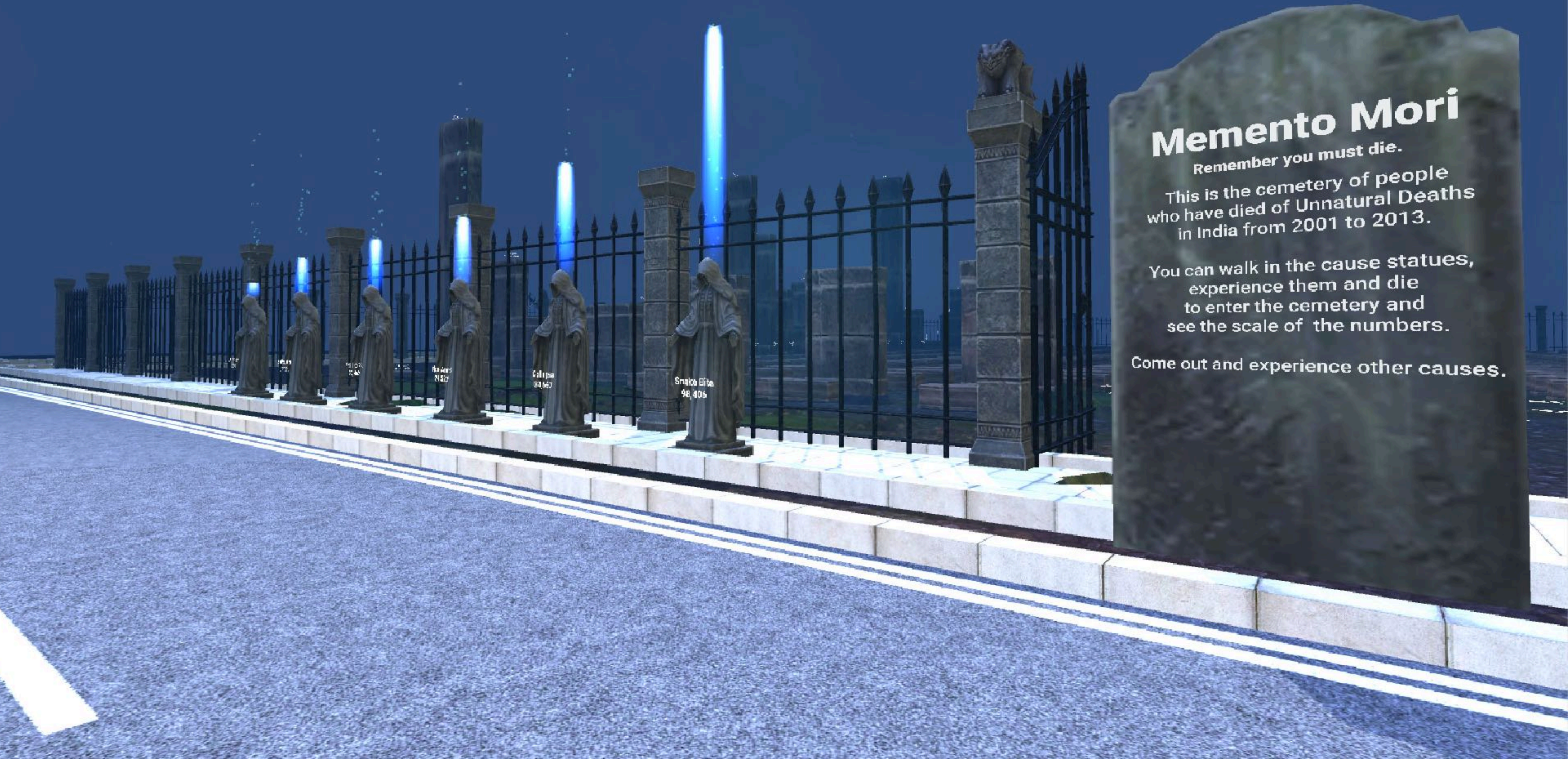
Memento Mori

Remember you must die.

This is the cemetery of people who have died of Unnatural Deaths in India from 2001 to 2013.

You can walk in the cause statues, experience them and die to enter the cemetery and see the scale of the numbers.

Come out and experience other causes.



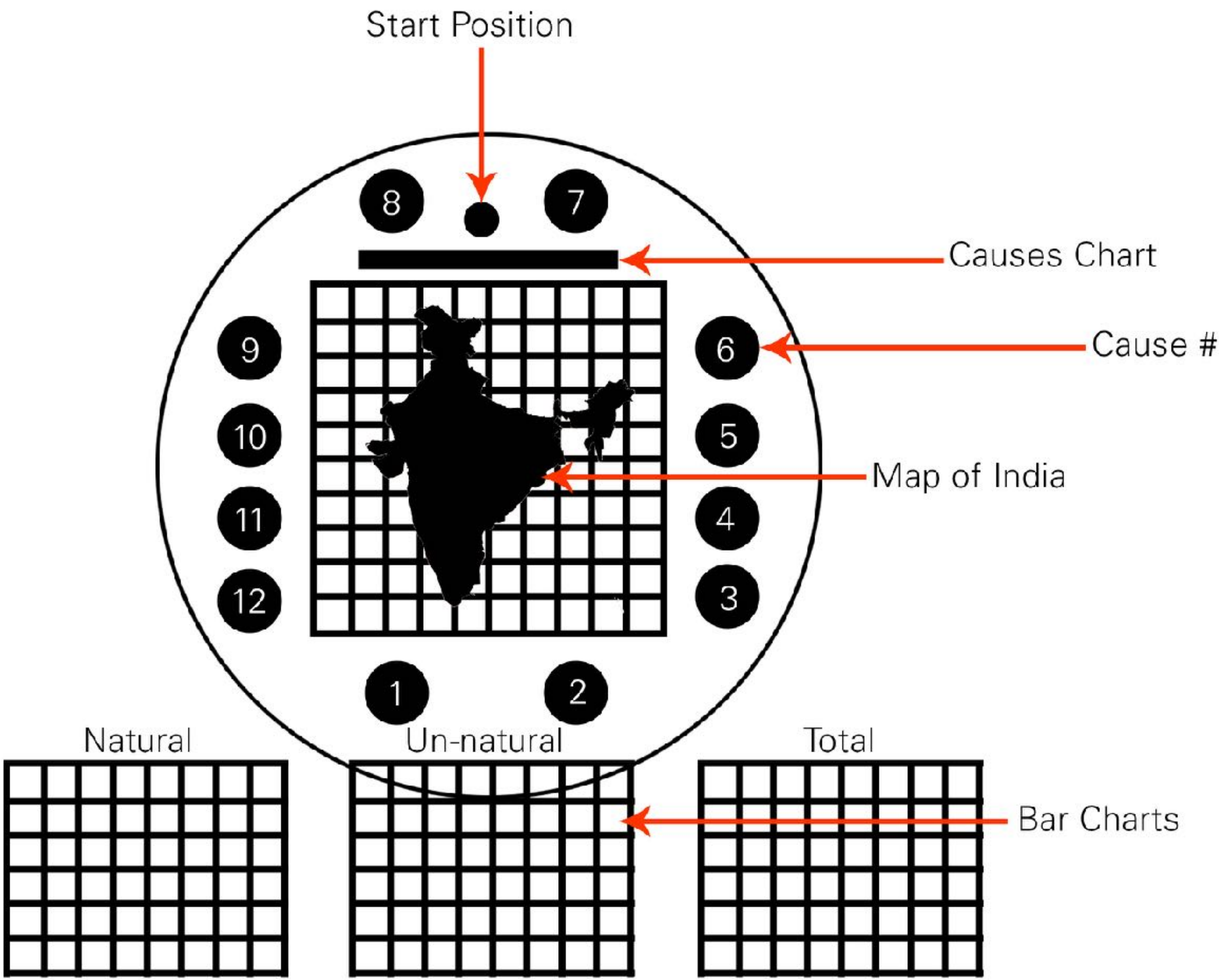


ANDHRA PRADESH
ARUNACHAL PRADESH
ASSAM
Bihar
Chhattisgarh
Goa
GUJARAT
HARYANA
HIMACHAL PRADESH
JAMMU & KASHMIR
JHARKHAND
KARNATAKA
KERALA
LAKSHADWEEP
MADHYA PRADESH
MAHARASHTRA
MANIPUR
MEGHALAYA
MIZORAM

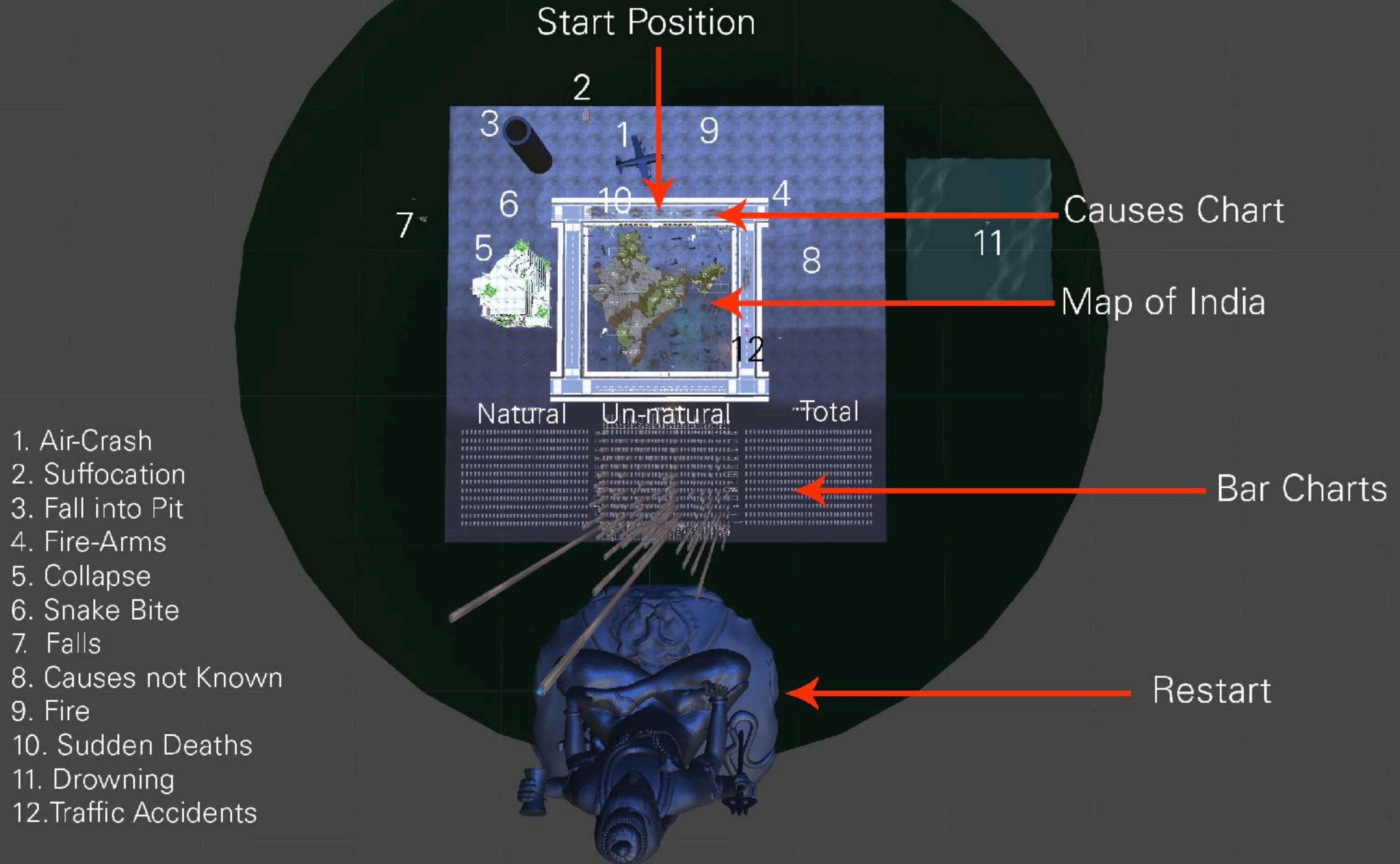
Final Design

Layout

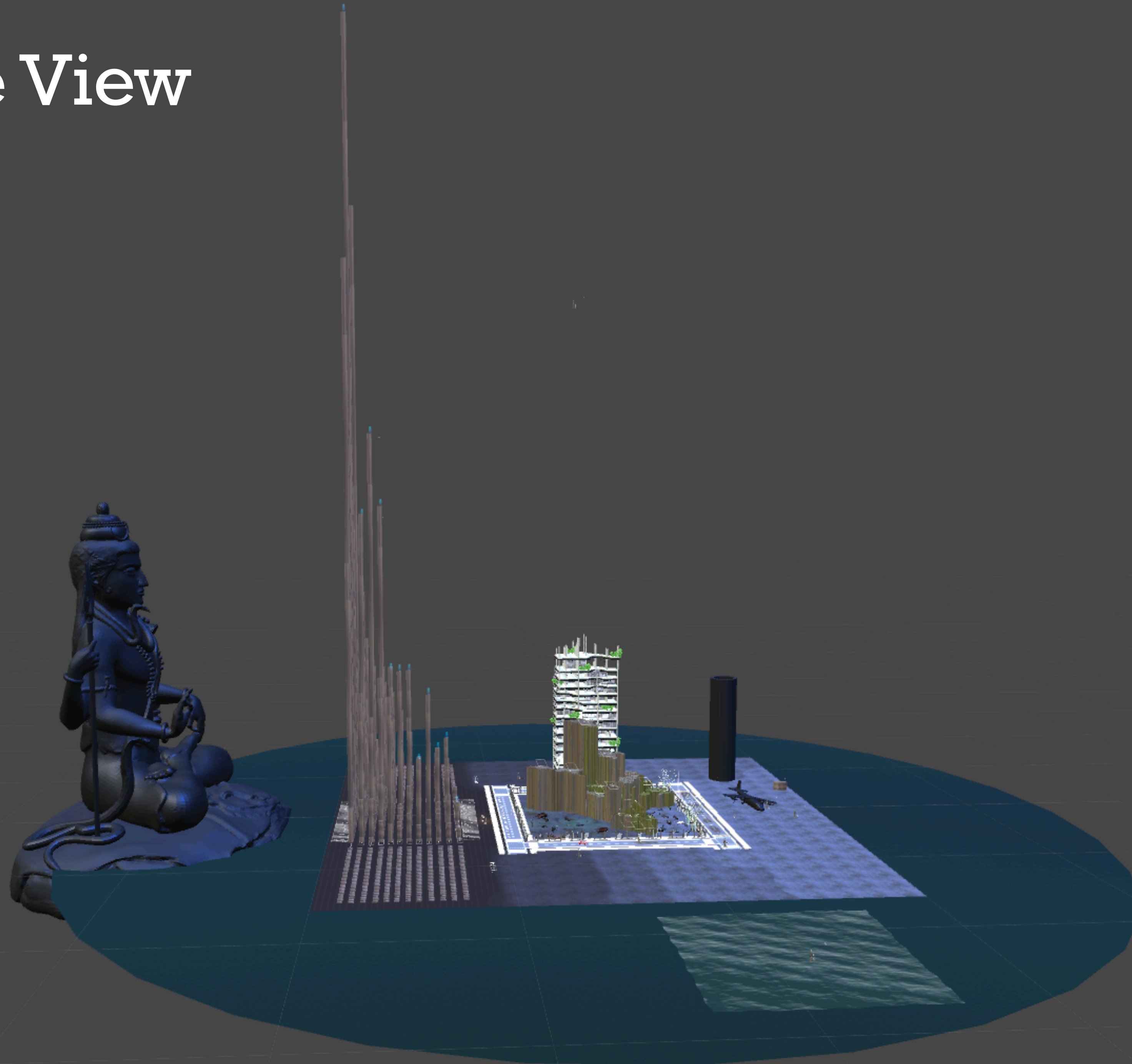
Layout



Layout : Top View



Layout : Side View

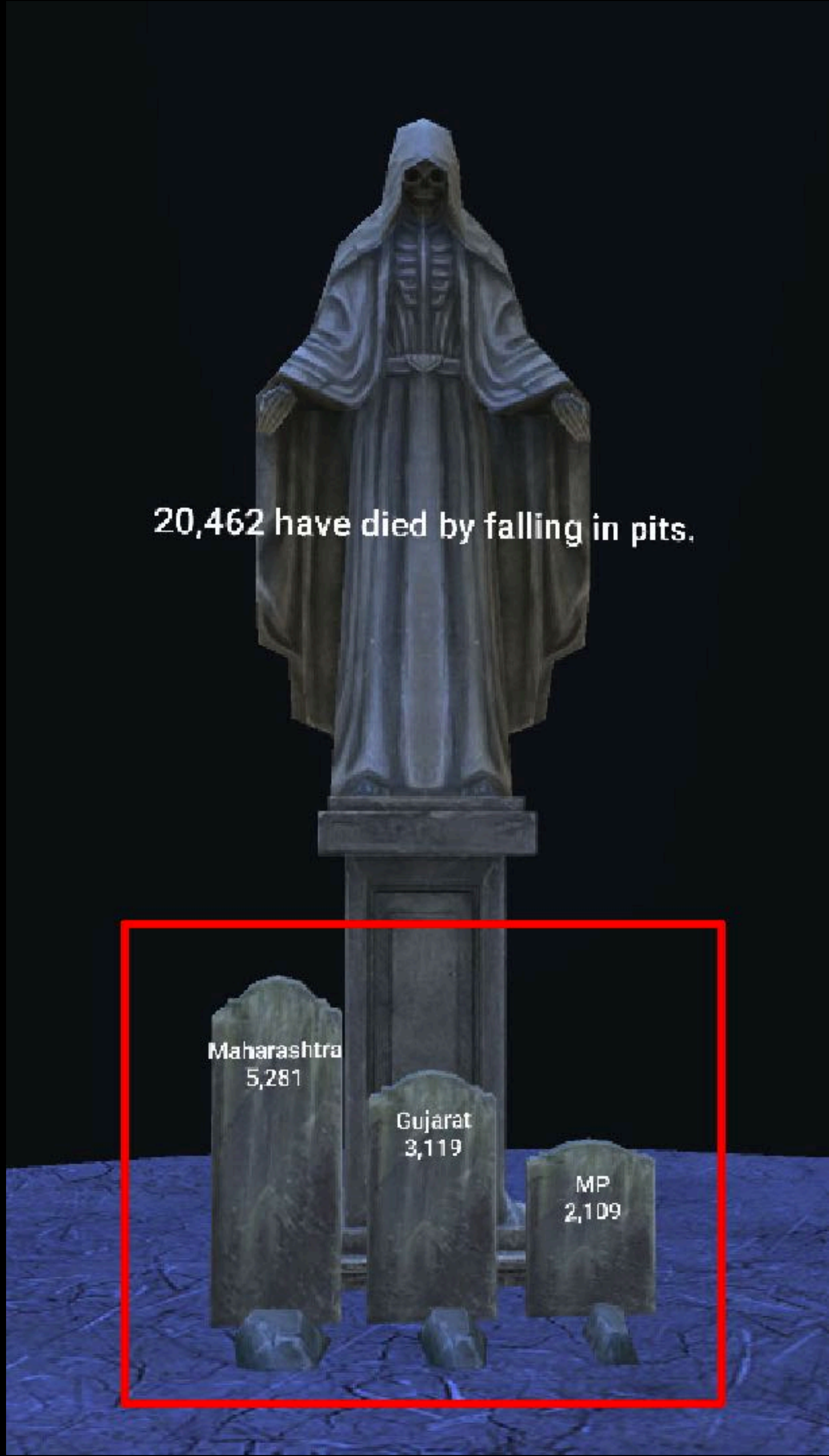


Visualisations

Bar Chart of Causes

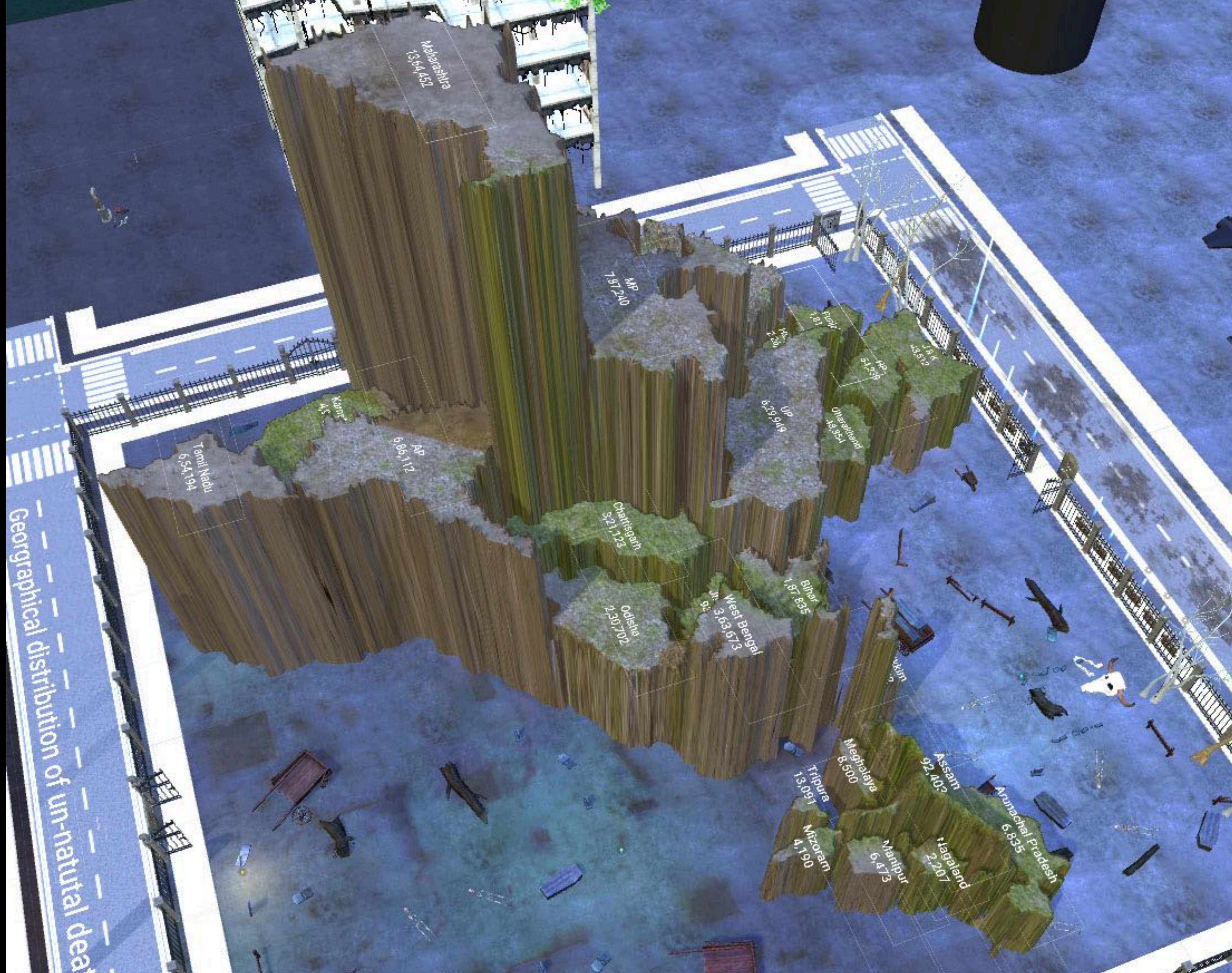


States

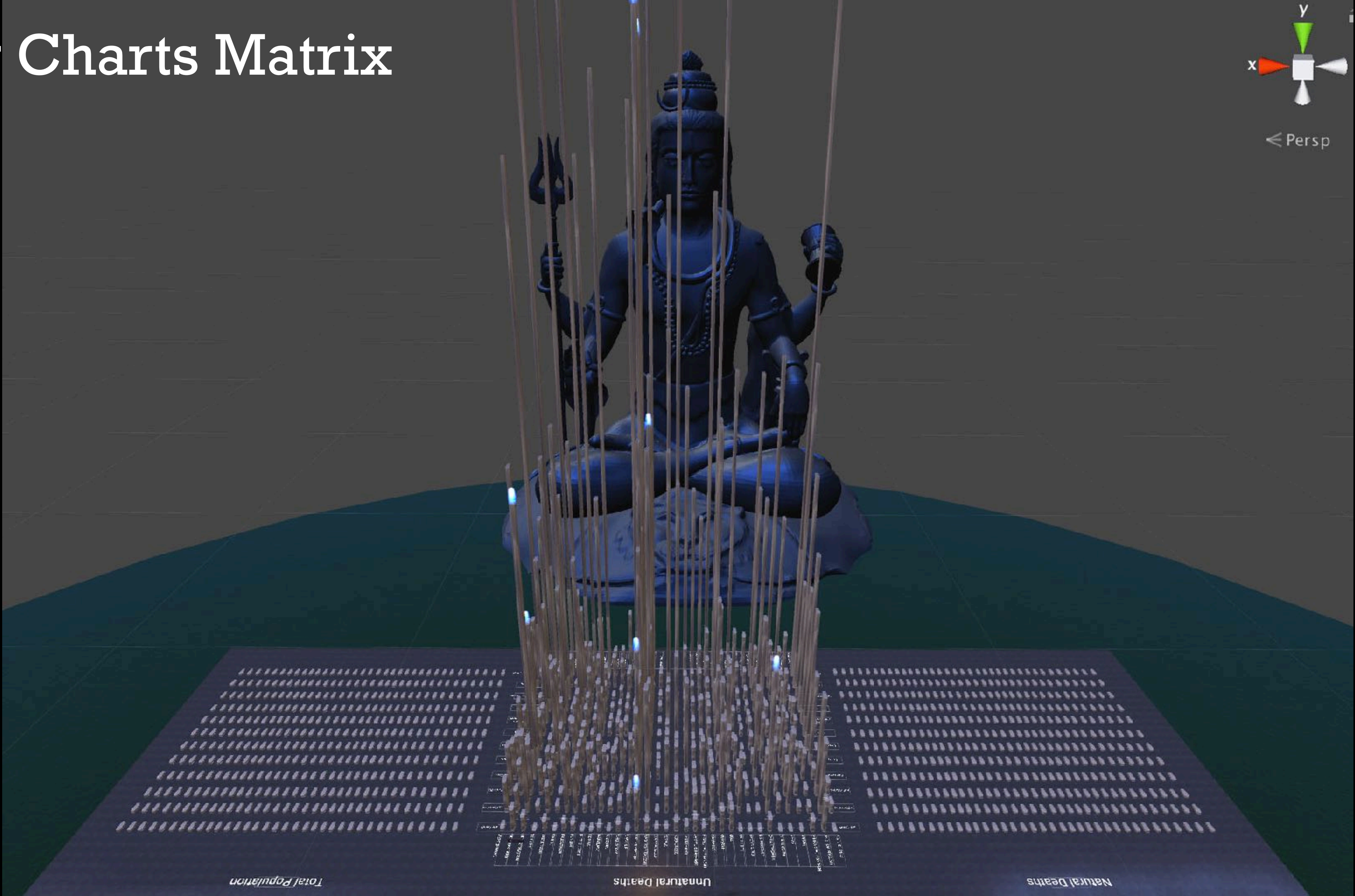
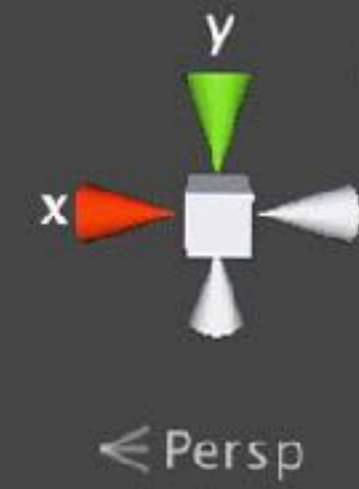




Map



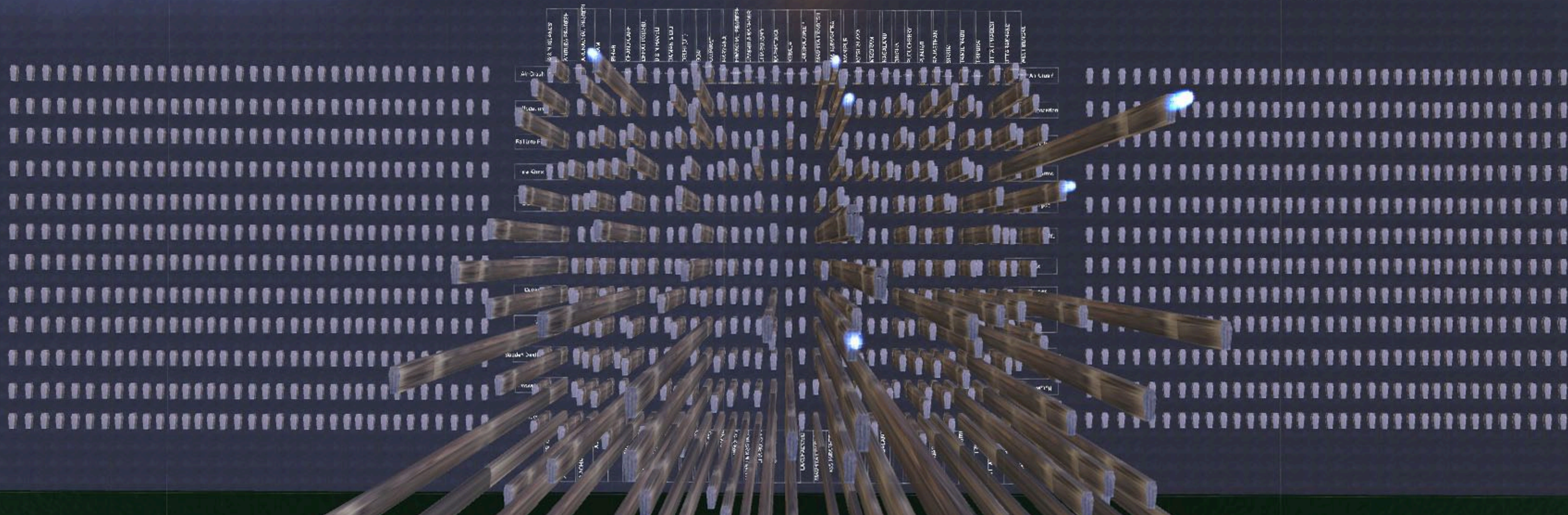
Bar Charts Matrix



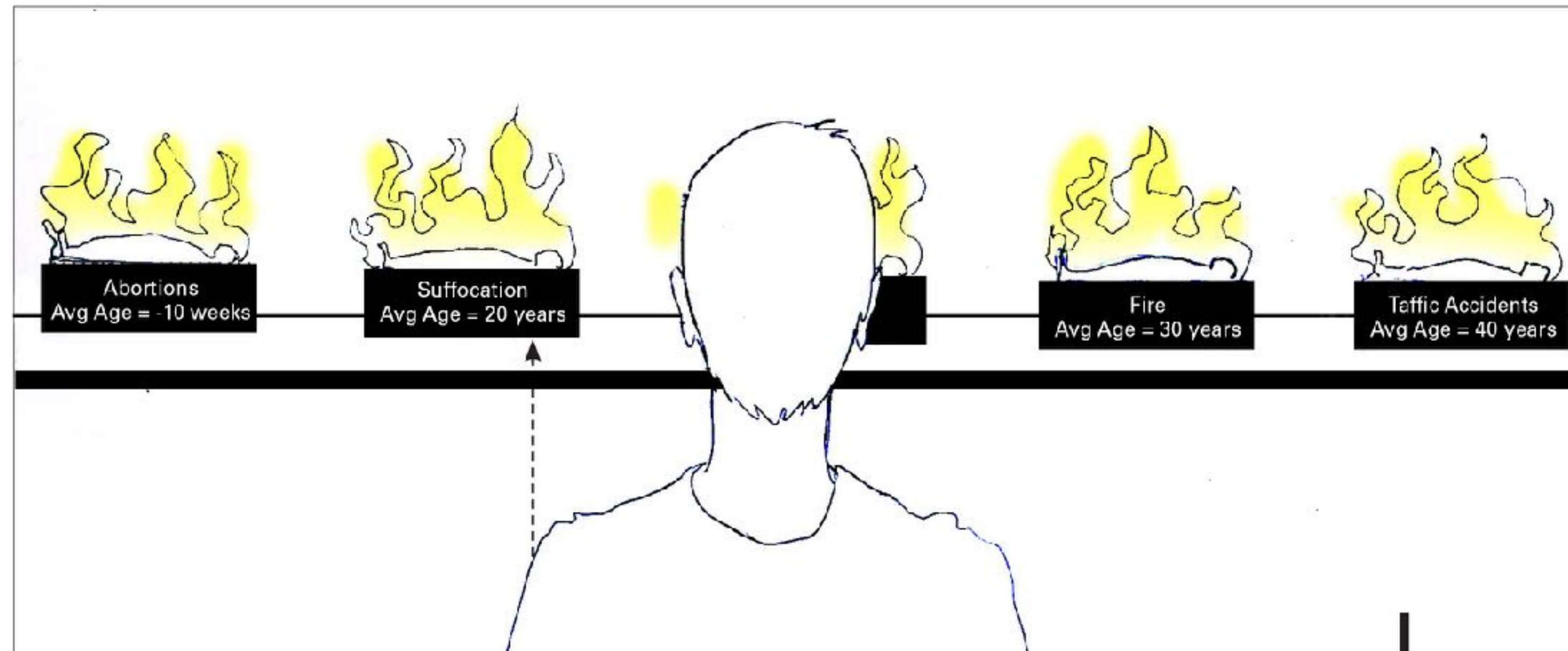
Natural Deaths

Unnatural Deaths

Total Population



Storyboard

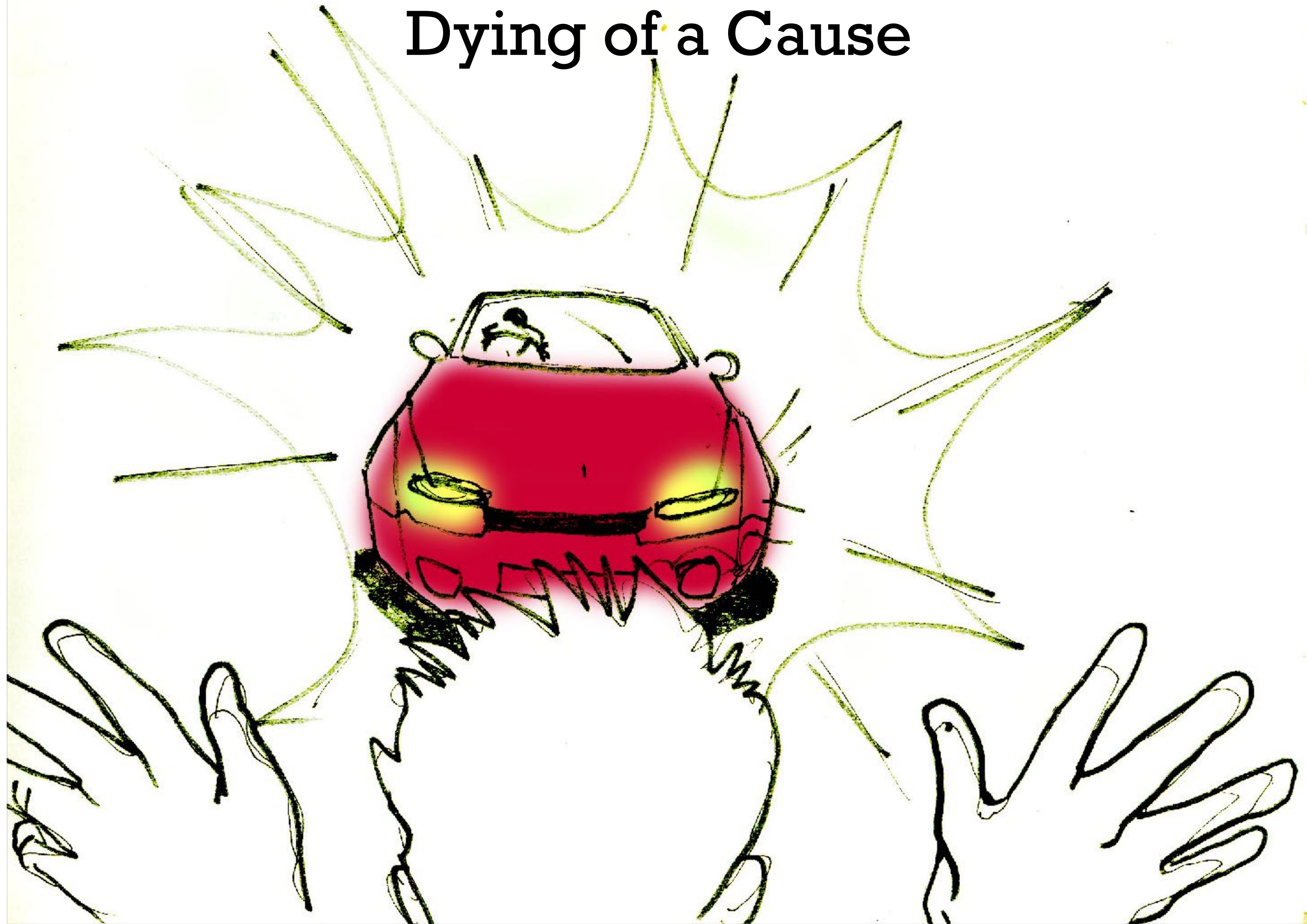


1. Standing in front of pyres, the causes of unnatural death

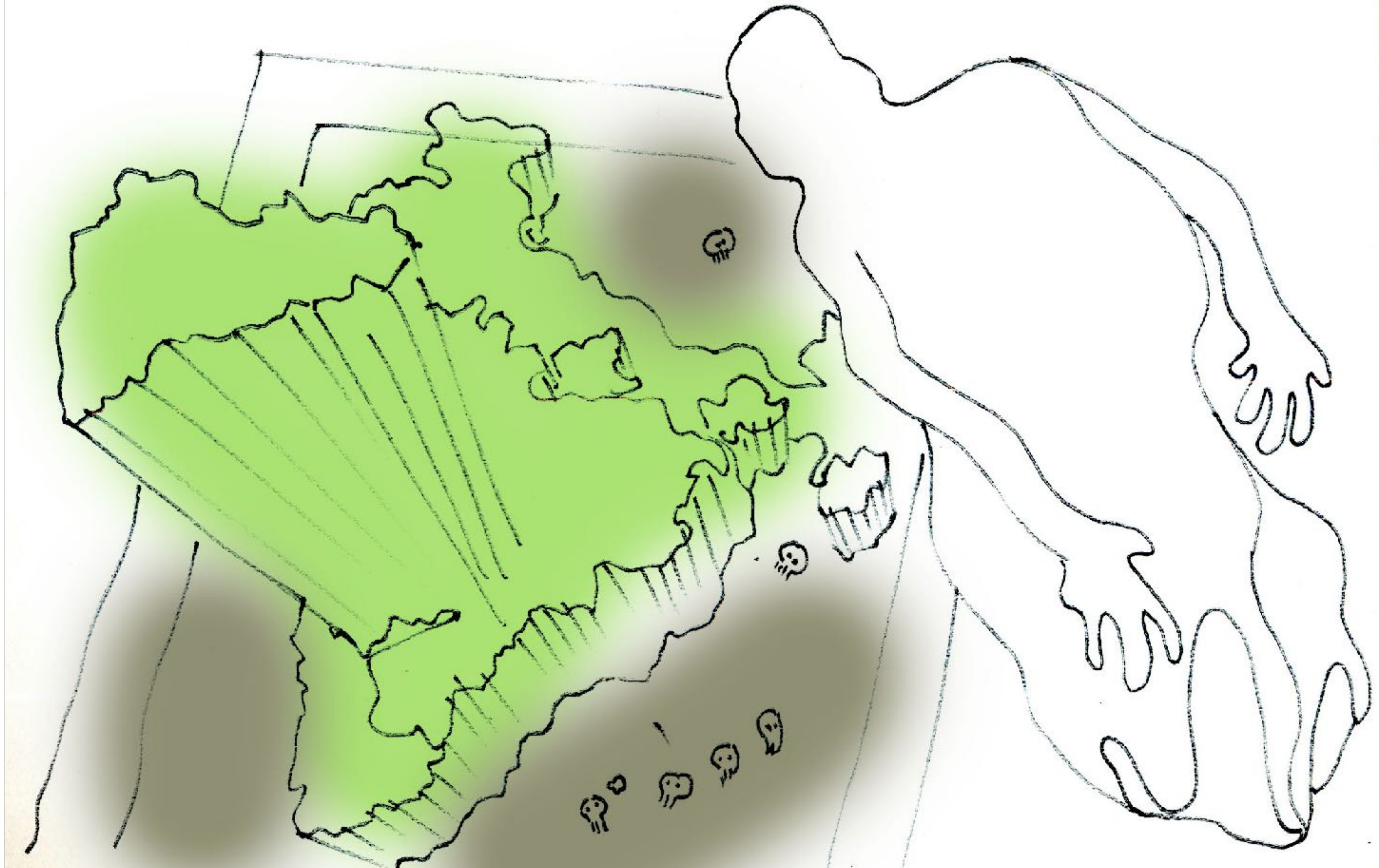


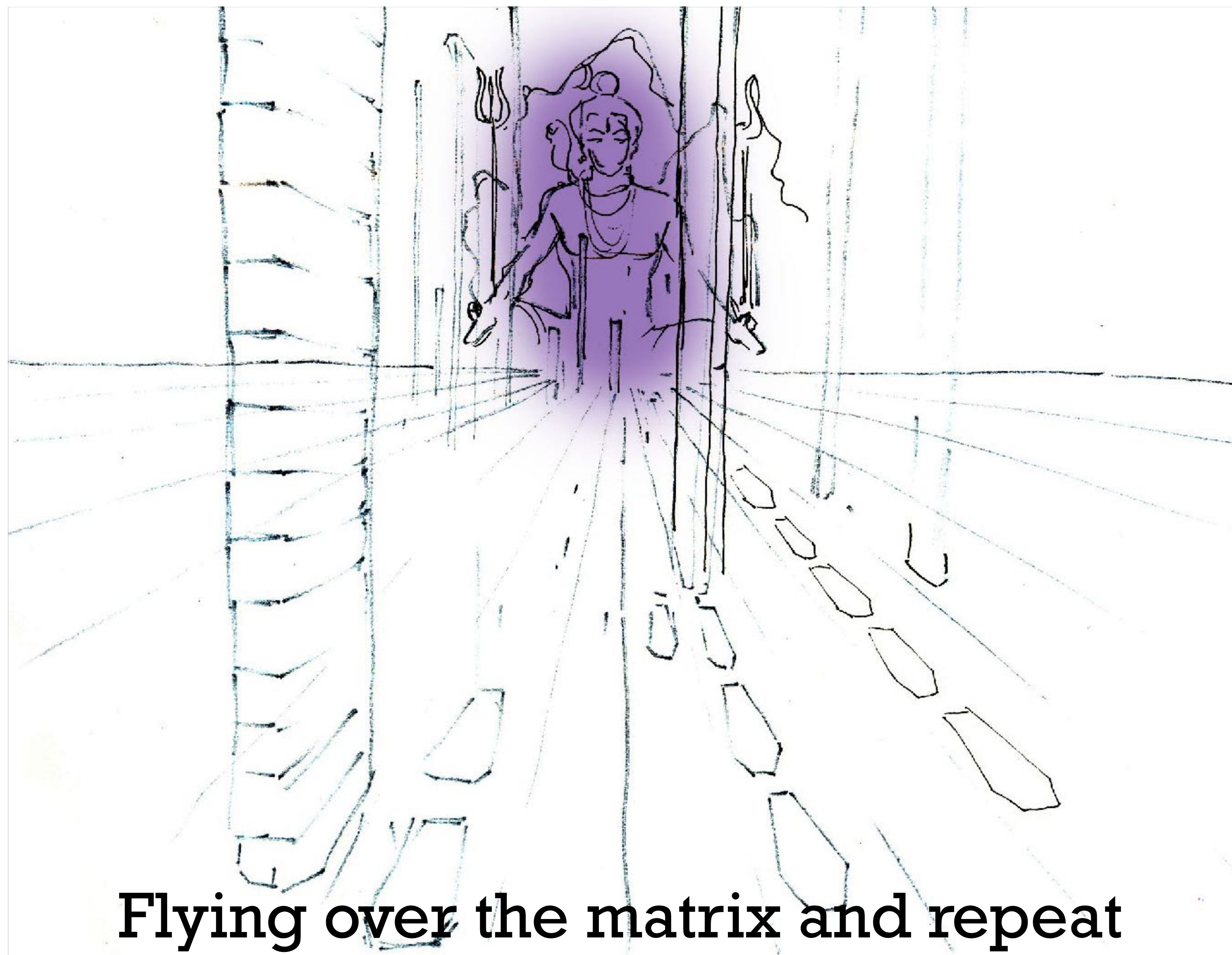
2. Selecting a cause by walking in a pyre

Dying of a Cause



Flying over the map as a ghost

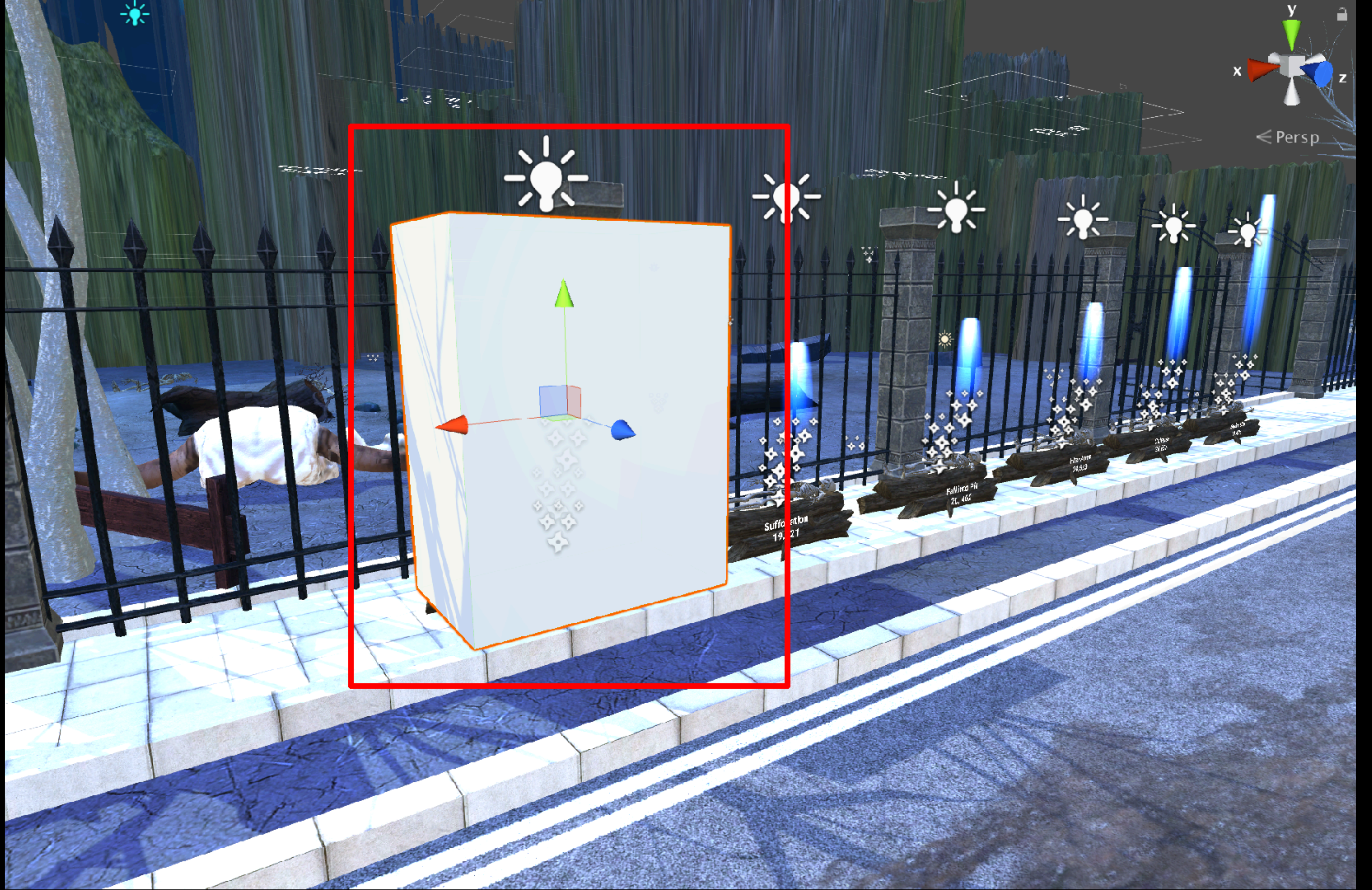




Flying over the matrix and repeat

Mechanics

- Feeling of Sudden Death
- Fitt's law ($T : D/W$)
- **Teleportation**



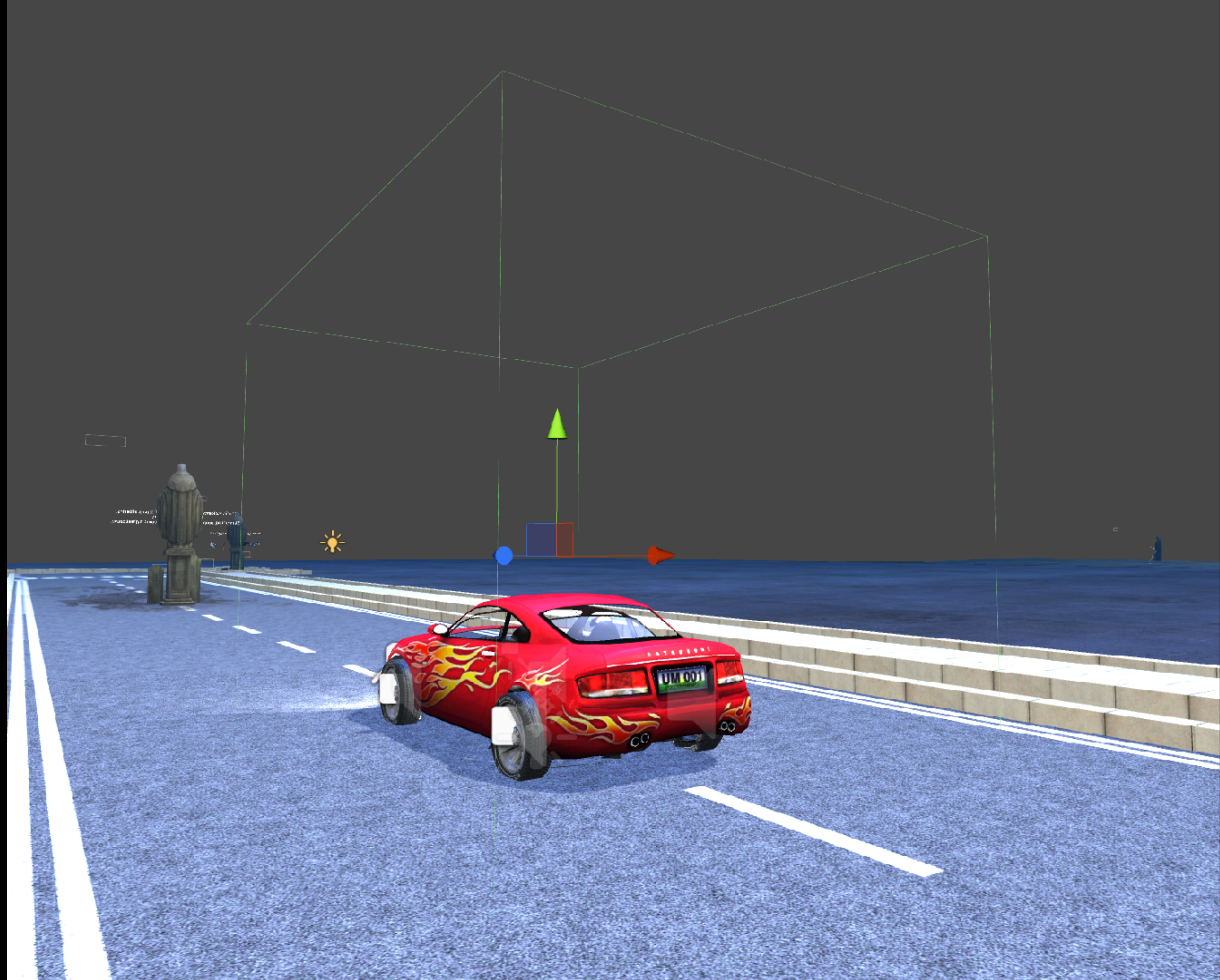
A 3D visualization of a cemetery. In the center is a tall, grey, hooded statue on a pedestal. A red rectangular bounding box encloses the statue and the graves in front of it. A green wireframe box is also visible around the statue. A yellow triangle points to the statue's head, and a blue sphere is positioned below it. A red arrow points from the text to the left. In the foreground, there are several grey tombstones. The background shows a vast field of many small, identical tombstones under a blue sky with a large, dark, abstract shape on the right.

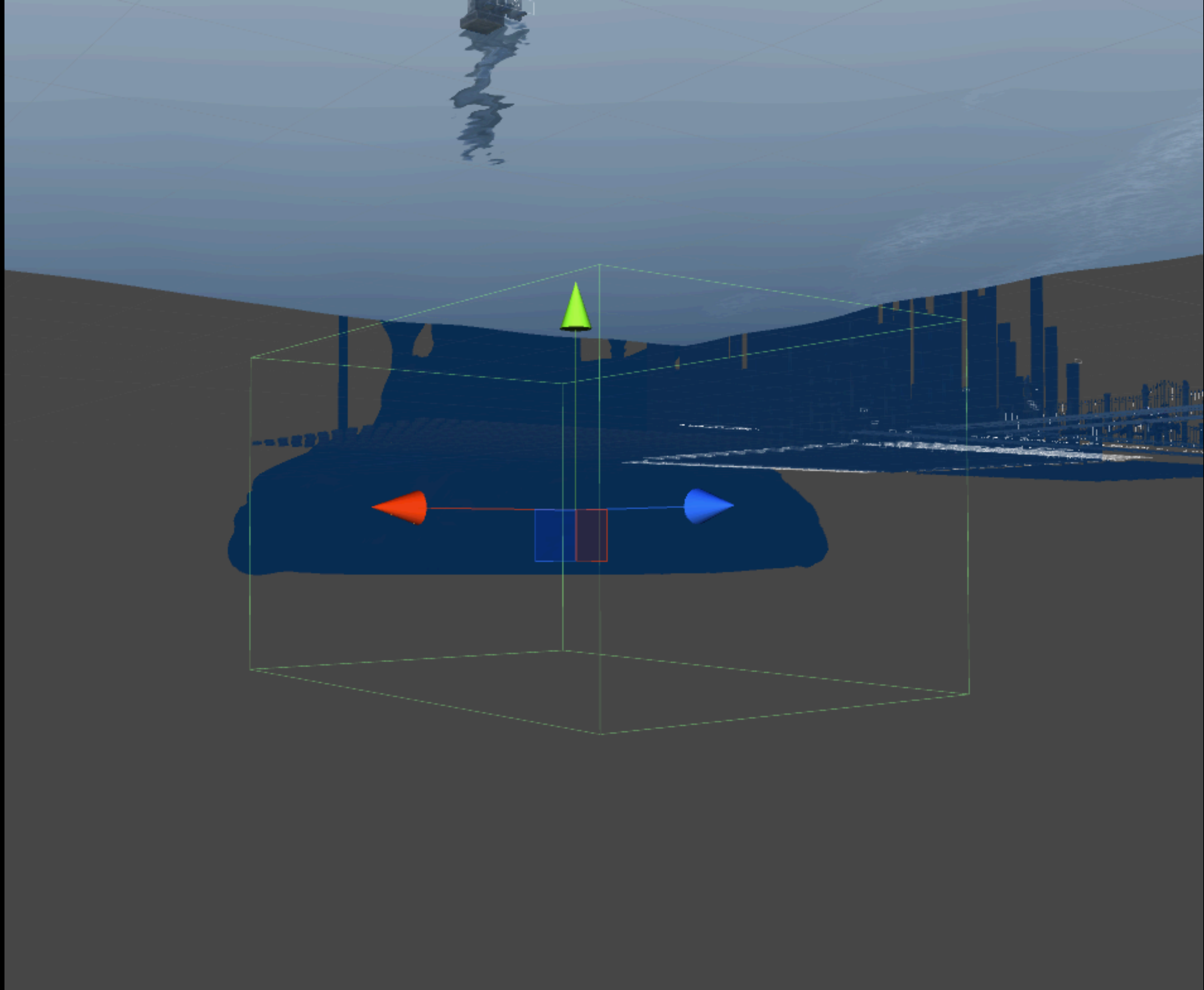
Causes of 2,19,119 peoples death is unknown.

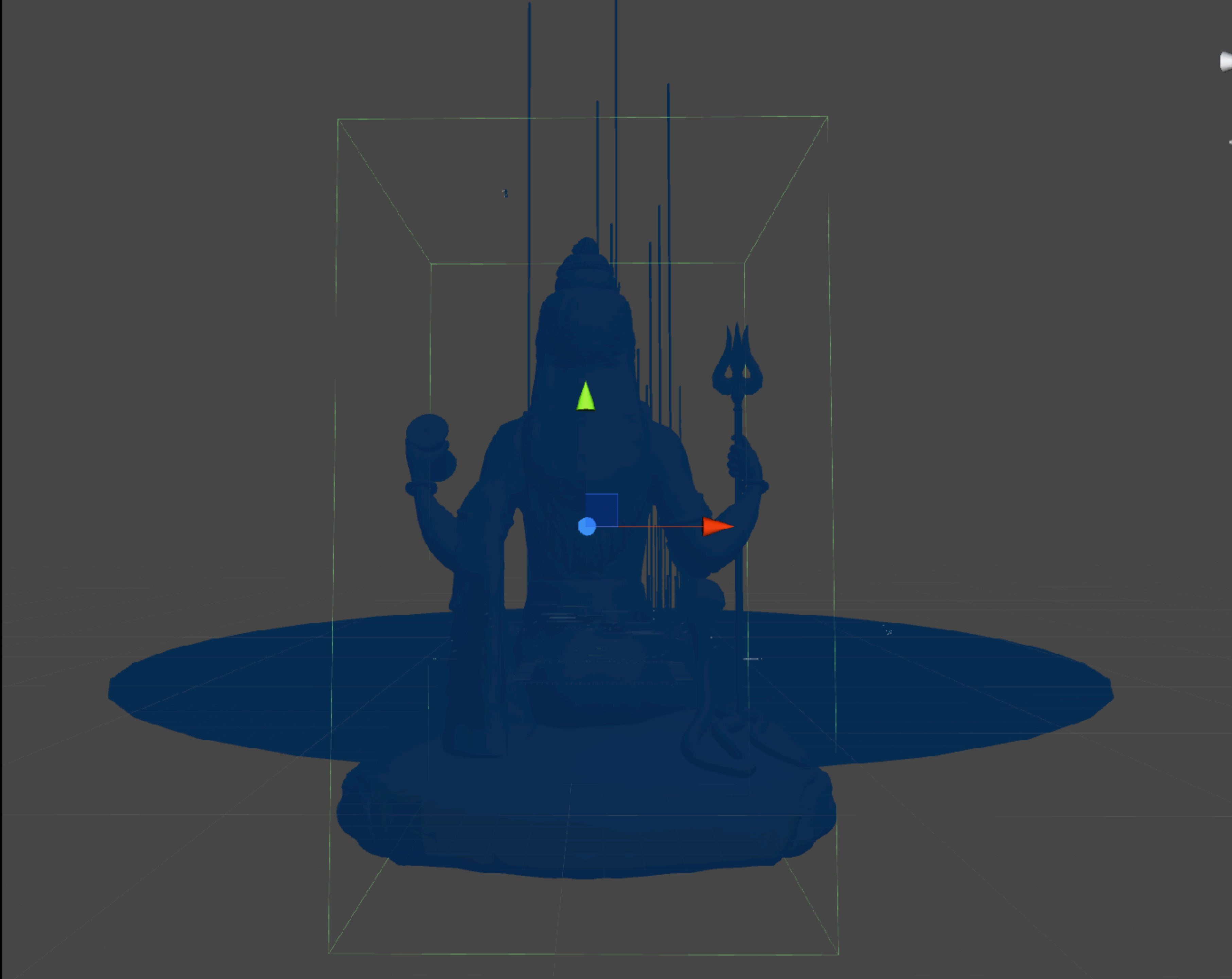
MP
28,546

WB
21,468

Chattisgarh
9,192









Enter
to
Re-start

Causes

- Air-Crash
- Suffocation
- Fall into Pit
- Fire-Arms
- Collapse
- Snake Bite
- Falls
- Causes not Known
- Fire
- Sudden Deaths
- Drowning
- Traffic Accidents

Data

DATA

Air-Crash

0, 28, 13, 0, 0, 0, 9, 0, 0, 0, 30, 21, 12, 6, 14, 4, 7, 1, 1, 7, **38**, 0, 10, 0, 3, 0, 0, 10, 16, 0, 14, 0, 20, 25, 2

Suffocation

7, 196, 5, 5, 242, 18, 5316, 2, 1, 118, 13, 796, 277, 127, 30, 348, 125, 178, 0, 4828, 986, 20, 9, 7, 1, 556, 9, 928, 1757, 6, 253, 6, 2207, 105, 239

Fall into Pit

38, 1697, 9, 42, 201, 20, 813, 12, 7, 351, 236, 3119, 588, 43, 38, 454, 315, 817, 0, 2109, 5281, 6, 20, 14, 4, 315, 14, 473, 1566, 2, 785, 37, 1218, 116, 144

Fire-Arms

0, 129, 51, 226, 276, 7, 1050, 0, 0, 440, 2, 52, 212, 18, 1668, 155, 340, 9, 0, 1508, 300, 42, 43, 22, 57, 58, 0, 521, 77, 6, 224, 18, 16332, 201, 479

Collapse

22, 3076, 93, 327, 1479, 22, 1004, 13, 4, 840, 118, 3632, 567, 229, 158, 1044, 1765, 850, 4, 2952, 3870, 74, 54, 37, 2, 361, 44, 895, 1831, 67, 3209, 40, 4982, 231, 761

Snake Bite

8, 10191, 4, 78, 611, 5, 10042, 58, 0, 148, 41, 6372, 656, 174, 38, 369, 7793, 583, 0, 25114, 14301, 0, 1, 7, 0, 5883, 184, 568, 3552, 1, 6478, 8, 1374, 73, 3691

Falls

156, 14885, 231, 319, 1207, 265, 4829, 175, 93, 4595, 1297, 14005, 2733, 3248, 671, 1442, 6092, 7965, 1, 10776, 26485, 69, 191, 179, 35, 4826, 627, 2133, 8321, 431, 6468, 146, 3815, 1017, 2061

Causes not Known

171, 10254, 354, 5806, 1779, 435, 20192, 122, 23, 9269, 472, 7211, 2032, 681, 1088, 1680, 18999, 3449, 2, 28546, 12384, 512, 466, 189, 28, 19548, 120, 2218, 18512, 144, 14030, 738, 15201, 996, 21468

Fire

241, 23054, 117, 1707, 5800, 279, 9417, 134, 115, 5022, 584, 31355, 4474, 796, 400, 3225, 18729, 3630, 5, 33245, 67838, 34, 166, 52, 29, 5130, 491, 4390, 10187, 80, 26163, 292, 13626, 1184, 8442

Sudden Deaths

393, 10878, 180, 700, 2431, 770, 7131, 262, 158, 4676, 414, 28653, 8416, 2613, 974, 1810, 11943, 17815, 10, 18418, 104294, 123, 254, 77, 20, 2604, 5323, 8830, 10969, 133, 16684, 643, 7265, 1495, 8204

Drowning

438, 27809, 279, 4438, 4992, 67, 18213, 193, 246, 1936, 2254, 21391, 5857, 1653, 640, 3170, 23408, 19871, 26, 52564, 64902, 152, 414, 284, 70, 7295, 1141, 5801, 19185, 248, 17341, 765, 11371, 1822, 7137

Traffic Accidents

297, 187690, 1609, 27041, 59619, 1760, 41854, 660, 287, 37713, 4352, 95458, 65532, 12521, 13603, 24403, 117882, 51809, 5, 105747, 222538, 1750, 2034, 889, 800, 45303, 2845, 42930, 104708, 863, 179587, 2753, 199782, 11955, 97008

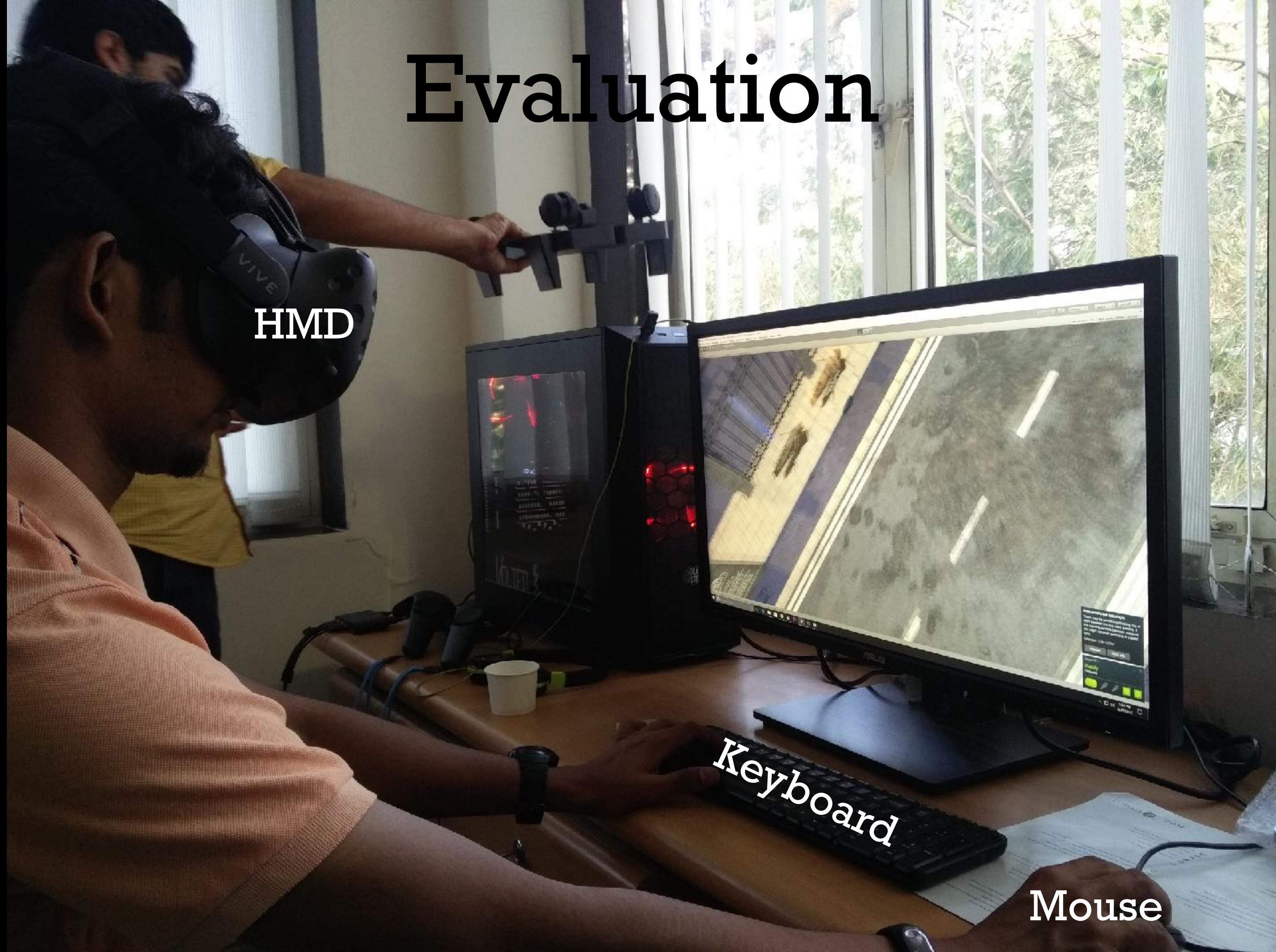
Walk Through

Evaluation

HMD

Keyboard

Mouse



Evaluation

- Think aloud test
- Contextual questions
- Cause, cause data, state, exploration, navigation, experience, VR sickness, Review and suggestions
- **Pain points**
Labels,
VR sickness,
Navigation
- **Ideas for next iteration**
Sound,
Navigation with controllers &
Visual cues,
Re-design of matrix,
Change of environment

Thank you for your attention.

If the jury wants to check out the demo, the setup is upstairs.